AIR CONDITIONING & REFRIGERATION News
THE NEWSPAPER OF THE INDUSTRY
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INSIDE DOPE

Learn to live and laugh—
Thus delay your epitaph

By GEORGE F. TAUBENECK

Story of the Week
Unseen Safety
Gags of the Week
Hot Stove League
Air Conditioning vs. Cancer
Progressive (?) Education
They'll Just Worry Us to Death

Story of the Week

Corporate doctor in Chicago handed out these mimeographed *Rules for Taking Care of a Sick Husband, Brother, or Father.* We quote:

(1) Dose him with gagging medicine every hour on the hour.

(2) Wake him up regularly to remind him that he is very ill, and needs help.

(3) Sympathize with him constantly, and mourn over the possibility that he can't be replaced.

"This routine," guarantees the Chicago physician, "will get any male out of the house within three days.

Unseen Safety

You won't see it mentioned in automotive advertising, but the 1955 cars are imaginatively engineered for *personal safety.*

Why don't the sales and advertising brains attracted to that giant business stress improvements of that nature?

Sadly, the answer is: Buyers don't care. Study after study has convinced top auto executives that Safety Gadgets and Guards leave the public cold. They're *needed,* but they have no sales appeal.

As one Detroit Automotive President summed it up to "Dope" not long ago:

"Everybody who can afford a car wants to feel younger today. So we give the old lady more color, and the old man more horsepower."

Gags of the Week

We are indebted to ace Reporter Dale Mericle for the disclosure of *Murphy's Law,* which is:

"If anything *can* go wrong, it will."

Quoted in its entirety from the Joke Dept. of the *Wall Street Journal:*

A man crossing a street got his coat-tail fanned by a madly speeding midget car. His revenge was instant and devastating.

We have no quarrel with Ike's policy of steering a course down the middle of the road. But we wish he'd make it clear to motorists that his policy doesn't pertain to driving a car.

Some wag has described public relations as the art of not treating the public like relations.—FRED BLACK, Director of Public Relations, Kelvinator Div., American Motors Corp.

Hot Stove League

Here's a "pro" football story for you sports fans:

Up in Green Bay, Detroit center Alex Wojie (simplified spelling adopted by all newspapers) took a hell of a pounding from "Buckets" Goldenberg.

All afternoon the moment Wojie released the ball "Buckets" would whomp him with a vicious two-handed uppercut. In the final quarter Wojie could hold his temper no longer. He stood up and threw a round-house fist at Goldenberg.

For this he was ejected from the game, and fined $50. Coach

(Concluded on Page 5, Col. 3)

Low Operating Cost, Portable Units Mark Emerson Line

NEW YORK CITY—Two innovations, a 7½-ampere "low-operating-cost" room air conditioner and a portable air conditioner, highlight the extensive 1955 line of room, residential, and commercial air conditioning units just introduced by Emerson Radio & Phonograph Corp., it has been announced by Benjamin Abrams, president.

The units, ranging from ⅓ hp. to 3 hp., are list priced from $189.95.

The low-operating-cost unit is the Emerson model E5C1, a ½-hp. unit which will sell for $299.95.

The unit draws considerably less current for operation than previous models and eliminates the need for special re-wiring jobs, the company claimed.

It was emphasized that this model meets the new code requirements for room air conditioners drawn up by the National Board of Fire Underwriters for installation on a 15-ampere multiple out-

(Concluded on Page 4, Col. 5)

Mitchell Announces New 'Versatile' Packaged Line

CHICAGO — A "versatile" line of packaged commercial and residential air conditioners of a new design was announced recently by Bernard A. Mitchell, president of Mitchell Mfg. Co.

Ranging from 2 to 7½ hp., the hermetically-sealed, self-contained units are divided into three general groups.

1. Store models in 2, 3, 5, and 7½-ton capacities, air and water cooled.

2. Residential add-on units in 2, 3, and 5-ton capacities, air and water cooled.

3. Year-round residential air conditioners, air and water cooled in 1½, 2, and 3-ton capacities incorporating gas-fired furnaces from 75,000 to 150,000 B.t.u./hr.

The units offer such advantages as a performance-guaranteed hermetic cooling system, Mitchell's

(Concluded on Page 17, Col. 1)

9th All-Industry Show Space Reservations Reach Early Peak

WASHINGTON, D. C. — "We have never had such a demand for space so early," said F. G. Coggin, chairman of the Exposition Committee of the Air-Conditioning & Refrigeration Institute, in announcing that the committee has assigned 48,138 sq. ft. of exhibit space to 107 members of ARI for the 9th Exposition of the Air Conditioning and Refrigeration Industry.

"With over 50 of our own members to hear from plus about 150 former exhibitors to be taken care of before the sale of space is offered for public sale, it begins to look as if every bit of the increased area of 23% will be sold long before show time."

Dates of the exposition are Nov. 28 through Dec. 1, 1955.

Exhibits will occupy the entire first floor and stage of the large Convention Hall in Atlantic City, N. J. Space is now being offered to former exhibitors and will not be offered to the industry at large until about March 1.

In addition to Coggin of Detroit Controls Corp., the Exposition Committee includes: A. F. Bernthal, Bundy Tubing Co.; John E. Dube, Alco Valve Co.; Lud Emde, Temprite Products Corp.; P. W. Grover, RCA Victor Div., Radio Corp. of America; H. A. Harty, Wolverine Tube, Div. of Calumet & Hecla, Inc.; and Mark E. Mooney, Typhoon Air Conditioning Co., Inc.

Complete information on the exposition can be secured by writing to George E. Mills, Show Direc-

(Concluded on Back Page, Col. 2)

W. Paul Jones, Servel Vice Chairman, Dies

EVANSVILLE, Ind. — W. Paul Jones, vice chairman of the board of directors of Servel, Inc., and president of the company from 1949 to 1954, died of a heart attack at St. Mary's hospital here on Jan. 20. He was 53 years old.

Funeral services for Jones were held in a local funeral chapel on Jan. 22, with burial in Oak Hill Cemetery.

Jones was born in Winslow, Ind. and attended Oakland City (Ind.) college, which conferred an honorary degree of LLD. on him four years ago.

His broad experience in the refrigeration and air conditioning industry extended back over a period of 35 years. From 1920 to 1929, he served successively as a service manager, sales manager, and general manager for Frigidaire distributors in Indianapolis and Evansville.

He first came to work at Servel in 1929 as educational director, was advanced to advertising and sales promotion manager, and later became assistant general manager of the commercial refrigeration division.

(Concluded on Page 4, Col. 1)

Frozen Food Convention Set for Chicago Mar. 13

CHICAGO — Members of the frozen food and allied industries who have not already done so are being urged to register and make room reservations now for the 1955 National Frozen Food Convention to be held at the Conrad Hilton hotel here March 13-16.

The convention this year is being sponsored jointly by the National Association of Frozen Food Packers and the National Wholesale Frozen Food Distributors.

Programs being arranged by the associations will cover all phases of industry operations. Another feature of the event will be the National Frozen Food Convention Exposition sponsored by the NWFFD.

Brunner Introduces New Condensing Unit, Compressor Series

GAINESVILLE, Ga.—New series of "Brunner-Metic" hermetic refrigeration condensing units and compressors in 1½, 2, and 3-hp. sizes were introduced at the Heating and Ventilating Exposition in Philadelphia last week.

The Brunner-Metic models are produced in the new Brunner Co. plant in Gainesville.

Air-cooled models in the medium and low temperature categories range from ¼ hp. to 3 hp., water-cooled models in the same design from ⅓ hp. through 3 hp.

(Concluded on Back Page, Col. 1)

Philadelphia Show Draws Record Crowd

Year-Round Air Conditioning Growth Seen as Reason For Large Show Attendance

PHILADELPHIA — Reflecting a tremendous growth of interest in the year-round air conditioning field, the 12th International Heating & Ventilating Exposition, opening here Jan. 24, was playing to the biggest crowds in the history of the event.

The contractors, engineers, and others who jammed into the Exposition during the first two days were in some instances being housed as far away as Atlantic City, so crowded were Philadelphia's hotel facilities.

In the air conditioning field, the exhibits were marked by unitary equipment in larger sizes (30 tons), more compact residential air conditioning systems, improved air cleaning and air handling devices, and sound control equipment. There was considerable evidence of efforts to make equipment easier to install. There were more heat pumps on hand.

Picture coverage on the Exposition will be published in the next two issues of Air Conditioning & Refrigeration News.

For the first time, a number of firms who specialize in "wet heat" systems were demonstrating "wet" year-round air conditioning systems. This included even some baseboard systems.

There was a general feeling of optimism prevailing among the exhibitors. A pick-up in business last fall, plus the present general increase in business this year, has made dealers and contractors, as well as manufacturers, feel that a big year is ahead of them.

Manitowoc Offers '2-Zone' Refrigerator-Freezer

CHICAGO — Manitowoc Equipment Works unveiled its 1955 line of freezers and the "2-Zone" refrigerator-freezer at the January market.

Thomas F. Hannon, sales manager, said the line includes three deluxe upright freezer models, the 2-Zone, and a "Decorator 2-Zone" with antique copper doors.

All Manitowoc freezer models and the 2-Zone have restyled outer appearance, "greatly enhancing their beauty for the home," the company said. "The outer doors are a perfectly smooth surface of high gloss enamel with stylized Manitowoc nameplate."

Floor dimensions for all models are 2½ by 3 ft.

Leader of the line is the 2-Zone, introduced last year. Though inner capacities of the refrigerator-on-

(Concluded on Back Page, Col. 3)

What Techniques Can Dealer's Wife Develop To Increase Husband's Business?

CHICAGO—Advice on how they can help their husbands in the appliance business was given the wives of retailers attending the women's luncheon of the annual convention of National Appliance & Radio-TV Dealers Association at the Conrad Hilton hotel here recently by Don Gabbert, NARDA vice president.

Gabbert told the women that "your husband's career is devoted to easing the work of other women. . . . Be proud of the work he is doing and be ready and willing to encourage him and inspire him because even the most capable man needs and welcomes all the encouragement he can get.

"To simplify our discussion, let's classify the help you can give him into two basic types.

"1. A keen knowledge of the women's viewpoint about appliances and the appliance business.

"2. The techniques you can use to help him accomplish his work more effectively.

"You, as a homemaker, should be prepared to tell him about the dreaming and the planning that women live through before they announce their interests in buying any new appliance. You should attempt to keep up to date through the various magazines, newspaper advertisements, and television programs to learn and understand the appeal that is being made to

(Concluded on Page 4, Col. 4)

DON'T MISS

Sales Ideas for Commercial Firms
Prince Advocates Single Sales to Little Stores
Know Your Product and Your Competitors', Tyler Advises
Plans for Future Spell Success or Failure, Says Biddle 6

Personalized 'List Price Package'
George Johnston Offers His Answer To Problem of Competing with Discounters 9

The Miami Story
How Commercial Firm Meets Competition, Handles Credit In Boom Town with Rapid Turnover 11

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How To Select Proper Flow Control Devices 14

Carrier Elects Russell Gray, M. C. Holm Vice Presidents, To Retain Present Posts

SYRACUSE, N. Y.—Election of Russell Gray and Melvin C. Holm as vice presidents of Carrier Corp. has been announced by Cloud Wampler, president and chairman, following formal action by the board of directors.

Russell Gray

M. C. Holm

Gray, associated with the air conditioning industry for more than 20 years, has been assistant general manager of the Unitary Equipment Div. and continues in that capacity.

Holm, one of the youngest executives of the industry at 38, will serve as heretofore as comptroller of Carrier.

Both men have come up through the ranks to executive status in Carrier's top management group.

Joining Carrier in 1933, following graduation from the University of Kentucky, Gray has been in all phases of sales activity, including that of a customer. He was part owner of Air Control, Inc., Carrier dealer in Indianapolis, from 1938 to 1942. Prior to his years as a dealer, Gray had been a field sales engineer.

Returning to Carrier in 1942, Gray was staff assistant to the president until 1944 when he went to the Dallas office as district manager for dealer sales.

In 1946 Gray returned to the home office in Syracuse, serving as assistant manager of direct sales. In 1949 he went to Atlanta as district direct sales manager for year years before returning to Syracuse. He was director of marketing services prior to his assignment as assistant general manager of the Unitary Equipment Div.

A continuous program of professional education has marked the career of Holm in his rise from an accounting position since he joined the Carrier organization in 1937.

He completed courses at Michigan State college and New York and Syracuse universities. In addition, he has and still maintains an active role in the Controllers Institute of America and the National Association of Cost Accountants.

Servel Strengthens Financial Operations With $9 Million Fund

EVANSVILLE, Ind.—A $9,000,000 financing arrangement has been set up to strengthen operations of Servel, Inc., in all areas of the business, according to Louis Ruthenburg, board chairman, and Duncan C. Menzies, president.

"This strengthening of Servel's financial resources," the Ruthenburg-Menzies statement said, "permits the exploitation of the company's product and market advantages, and insures the development of many important operational projects, including modernization of certain manufacturing facilities for making civilian products of high quality at lower costs."

In announcing the $9,000,000 fund, Ruthenburg and Menzies said that Servel's 1955 appliance line would include new models of all the products in the 1954 line—gas and electric household refrigerators, portable refrigerettes, home freezers, room air conditioners, and automatic water heaters. Servel's other major civilian products are all-year air conditioning equipment, and commercial refrigerating units.

Servel's substantial production of military aircraft wings and components will continue to be financed by a V-loan agreement, it was pointed out.

New York Univ. To Offer Evening Courses In Air Conditioning, Heating, Refrigeration

NEW YORK CITY—New York university's Div. of General Education will offer four adult evening courses in heating, refrigeration, and air conditioning during the spring 1955 term, Dean Paul A. McGhee has announced.

A course in "Heating and Ventilating," taught by Harold S. Birkett, assistant secretary of the Brooklyn Union Gas Co., will be presented from 6:15 to 8 p.m. on Tuesdays and Thursdays, Feb. 8 to May 31.

Birkett, a professional engineer, will cover such subjects as heating systems, including steam, vapor, vacuum, hot water, and warm air; selection of heating equipment, including boilers, radiators, valves, and specialties; fan laws and fan performances; and selection of fans, heaters, registers, and grilles.

John F. Briggs, Jr., an engineer with Carrier Corp., New York, will conduct a course in "Air Conditioning" from 6:15 to 8 p.m. on Wednesdays and Fridays, Feb. 9 to May 27.

Also an adjunct assistant professor of mechanical engineering at NYU, Briggs will discuss basic physiological concepts, psychrometric principles and use of standard psychrometric charts, selection of proper air supply conditions, methods of cooling and dehumidification, and selection of equipment, cooling coils, and air washers.

Scheduled for the spring term also is a course in "Heating and Air Conditioning Design." The class is to meet from 6:15 to 8 p.m. on Mondays, Feb. 7 to May 23, and will be taught by Wilbur R. Eriksen, mechanical engineer with the George A. Fuller Co.

The course will cover refrigeration, pneumatic and electrical controls, and ductwork and piping design techniques as applied to various types of commercial, domestic, and industrial heating and air conditioning problems.

"Elements of Refrigeration" will be offered by the division from 7 to 9:45 p.m. on Tuesdays, Feb. 8 to May 31. The instructor is Francis M. Fives, sales engineer with Carrier Corp., New York.

The course is intended for technicians in refrigeration who desire to acquire a theoretic knowledge of the field. Fives will lecture on the elementary thermodynamics of compression and absorption systems, and properties of refrigerants and types of equipment, including compressors, conductors, and evaporators.

Registration for the courses will be conducted at the offices of the Div. of General Education, New York university, 1 Washington Sq. N., New York City, from Jan. 24 to Feb. 11.

Four Companies Become New Members of ARI

WASHINGTON, D. C.—Four companies recently became members of the Air-Conditioning and Refrigeration Institute, ARI has announced.

They are E. D. Goodfellow Co., Inc., Memphis; Peerless Sales Div., United Cooling Towers, Inc., Little Rock, Ark.; Dover Mfg. Co., Independence, Mo.; and The Marley Co., Kansas City, Mo.

E. D. Goodfellow produces cooling towers, induced draft pumps, and centrifugal pumps. Peerless Sales makes the Peerless "Aqua Saving" cooling tower, packaged towers, and induced draft towers, 2 through 40 tons.

Induced draft cooling towers, 2-100 tons, and atmospheric cooling towers, 3-105 tons, are products of Dover Mfg. Marley also manufactures cooling towers.

Worthington Div. Presents 'Merchandiser of Month' Award to Tennessee Firm

HARRISON, N. J.—A special "Merchandiser of the Month" award will be presented to Templin Equipment Co. of Kingsport, Tenn., by Worthington Corp.'s Air Conditioning & Refrigeration Div.

The company, which also serves parts of Virginia, will be presented a certificate of commendation.

By formulating a planned campaign consisting of newspapers, television, and radio advertising, Templin Equipment has displayed outstanding achievements in promoting and selling Worthington year-round home air conditioners.

Worthington will present a similar award each month to their winning dealer.

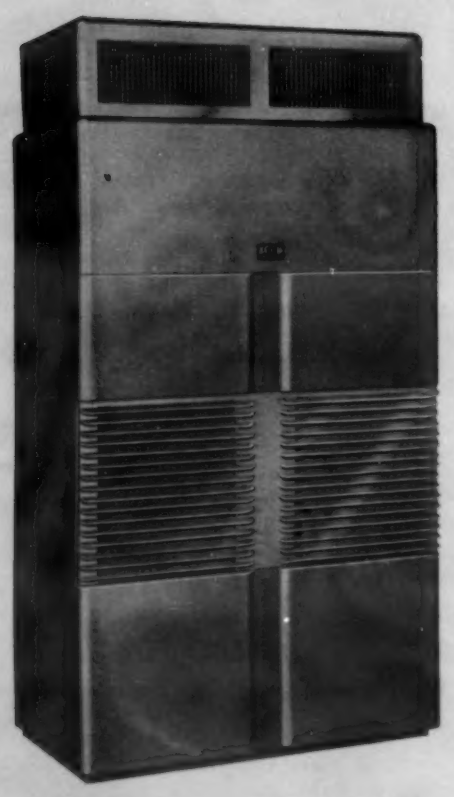
Plan To Condition New Memphis Office Bldg.

MEMPHIS—Work has begun on the Edway building, the city's first major downtown office building since 1929. The 12-story structure, of concrete and steel construction, will be air conditioned.

REMEMBER LAST SUMMER'S Blistering HEAT?

Think Ahead

Do your 1955 planning on Koch Air Conditioning— Now!



KOCH SELLS BEST

DOLLAR-WISE AND OTHERWISE

- 3 major sizes . . . 3, 5, 7½ H.P.
- Top quality in every respect
- Priced for profit to you
- Prompt shipment on all models

We urge you to act now . . . to get the facts about the Koch Air Conditioning program. Remember, there's a mammoth sales potential for air conditioners. The business is there and waiting — for YOU!

Write for the Complete Story, Today!

KOCH refrigerators, inc.
NORTH KANSAS CITY 16, MO.

FIGHTING THE HEAT HAS BEEN OUR BUSINESS SINCE 1883

BURDEN

alan e. BURDEN co., inc.
1940-50 Pontius Ave. L. A. 25, Calif.

Fourth Annual
Trade Show and Convention
of
Institute of Surplus Dealers, Inc.
FEBRUARY 20, 21, 22, 1955
212 AAA Armory
62nd St. & Columbus Ave.
New York City, N. Y.
A Few Booths Still Available
For Information
Write, Wire or Phone Inquiries to:
Institute of Surplus Dealers
673 BROADWAY, NEW YORK CITY, N. Y.
ALGONQUIN 4-4638

SALES ENGINEER REQUIRED

For immediate opening contacting Dealers in Colorado, Western Nebraska and Southern Wyoming.

FRIGIDAIRE SALES CORPORATION
215 WAZEE MARKET
DENVER 4, COLORADO

WAY OUT IN FRONT!

TYLER SALES-CASES!

MEAT. New low 36" height for faster, easier shopping . . . speedier store traffic . . . fewer traffic jams!

DAIRY. Huge accessible capacity — every selection within easy, complete reach of the customer!

PRODUCE. Approaching customer sees entire display direct . . . not through glass. No high-front barrier! No time-wasting struggle to get at merchandise!

FROZEN FOODS. Savings with lower condensing unit requirements . . . faster loading and cleaning!

DRAMATIC SUCCESS of revolutionary Tyler Sales-Cases proves again that it pays to tie up with Tyler!

Pioneered a year ago . . . truly a new slant on open merchandising . . . Tyler Sales-Cases have made both shopping and loading faster and easier, simplified cleaning and maintenance, increased sales, cut costs and boosted profits for food store operators all over the country!

Tyler's 'way out ahead — leading the parade — setting the pace for the industry! *And Tyler Agents are cashing in again on another major Tyler ADVANCED DESIGN triumph!*

Other recent Tyler developments: eight standard COLORS FOR SALES-CASES in addition to white; single and multiple CONDENSING UNIT ASSEMBLIES; new line of STAINLESS STEEL Reach-In and Slide-Door Refrigerators. Write Tyler today for further information!

TYLER LEADS — others follow!

TYLER

TYLER REFRIGERATION CORPORATION
NILES, MICHIGAN

In Canada — write Tyler Refrigerators, 128 Avenue Road, Toronto, Ontario

The big Tyler line includes Sales-Cases, open and service Display Cases, Refrigerated Display Tables, Storage Freezers, Sectional Walk-In Coolers and Freezers, Rolling-Cold Packaging Conveyors, Reach-In and Slide-Door Refrigerators, Condensing Unit Assemblies, Adjustable Metal Shelving, Beverage Coolers, Beer Dispensers, Wilson Bulk Milk Coolers, Home Freezers.

Prospects include supermarkets, superettes, food stores of all types; restaurants, hotels, institutions, hospitals, schools, delicatessens, drive-ins, cafeterias, drug stores, florists, bakeries, bars, taverns—any place where perishable food is sold or served.

W. PAUL JONES

W. Paul Jones Dies--

(Concluded from Page 1, Col. 3)

When Fairbanks-Morse Co. entered the household appliance field in 1934, Jones became executive vice president of that company's new division in Indianapolis.

From 1938 to 1940, Jones was president of Philco Refrigerator Co. at Philadelphia. When the company's refrigerator business was merged into Philco Corp. in 1940, he was named vice president and general manager of Philco's refrigerator division.

In 1949, Jones returned to Servel as president and general manager, succeeding Louis Ruthenberg, who had been elevated to board chairman. Under Jones' presidency, Servel's appliance line was expanded by the addition of "automatic ice-maker" refrigerators, portable refrigerettes, room air conditioners, and home freezers.

In September, 1954, Jones became vice chairman of Servel's board, and was succeeded as president by Duncan C. Menzies. At the same time, Jones was elected president of Kellett Aircraft Corp., of Camden, N. J., manufacturer of military helicopters, of which company he had been board chairman since 1950.

Jones had invented and patented a number of developments in the refrigeration field. He was a member of the American Society of Refrigerating Engineers. He was one of the organizers and a former trustee of the National Sales Executives Council. During World War II, he was chairman of the OPA electric refrigeration industry advisory committee.

Survivors include Mrs. Jones, formerly Miss Clesta Jean Walker, of Winslow, Ind.; a daughter, Mrs. Robert Theis, of Pittsburgh; and a granddaughter and two grandsons.

To Cool New Church Unit

JACKSON, Miss. — The Broadmoor Baptist Church has awarded a contract to Gayle Burke, of Jackson, for construction of a two-story addition to the present educational building. It will be air conditioned, according to the Rev. Gordon Sansing, pastor.

Sunbeam Appoints 9 Cooling Sales Engineers

ELYRIA, Ohio—Appointment of nine cooling sales engineers has been announced by Thomas W. McNeill, president, Sunbeam Air Conditioner Div., American Radiator & Standard Sanitary Corp.

The new field representatives and their territories are:

James I. Bickley, Landover, Md. —Baltimore-Washington, Philadelphia, Richmond territory; W. D. Campbell, Pittsburgh—Pittsburgh, Buffalo territory; H. I. Dingle, Houston—Houston territory; C. E. Johnson, Chicago — Illinois-Iowa territory; T. J. Conway, St. Louis —St. Louis, Kansas City territory.

Also, Maurice G. Nelson, Cincinnati—Cincinnati, Cleveland, Detroit territory; John B. Mitchell, New York—Boston, New York, Newark territory; Lester G. Simpson, New Orleans—New Orleans territory; and Robert T. Watt, Atlanta—Atlanta territory.

McNeill said the appointments are in line with the company's expectations for more business.

The men have completed a five-day indoctrination course, supervised by W. W. Woodroof, manager, cooling sales, at the plant in Elyria. Taking part in this meeting were F. P. Weil, vice president, manufacturing; A. D. Sullivan, chief air conditioning and refrigeration engineer; W. G. Senft, product manager; and R. J. Berkshire, marketing manager.

NARDA Wives Told How To Help--

(Concluded from Page 1, Col. 3)

sell a refrigerator or a range today.

"You can then develop your questioning conversation about his business to include comments on the latest product improvements and techniques in selling. He may discover that he has been so busy training salesmen and taking inventory that he is not up to date on his very own product. Help him be a wise, alert dealer so that he will be prepared when the next wholesale salesman calls at his store.

VISIT OTHER STORES

"You will find it very interesting and helpful to visit other stores in your community that sell appliances so that you may have a standard for comparison in judging your husband's store. . . .

"Inasmuch as you are the wife of an appliance dealer, your friends should expect you to be interested in their new appliances and you should inquire from them about their new gadgets and discover what they like or what they do not like about their latest purchase.

"If it is a product from your husband's store, you may be able to establish more satisfaction in the purchase or possibly report any dissatisfaction that may exist and in this way save a customer and a friend for him.

SOUND OUT TRENDS

"You will be able to sound out for your husband any of the trends that may exist in consumer's buying through your participation in clubs and general contact with other homemakers.

"If the whole neighborhood is talking about a new type dryer, it is time you warned him to investigate the possibilities of increased activities in his dryer department. If your friends have all become conscious of the need for owning a freezer, he should be informed of this new interest."

Gabbert continued: "Why not make it a point to find out from your friends how they feel about the appliances they own or about the things they would some day like to have. Incidentally, there is more genuine business around indirectly through this method than by any means of direct solicitation.

INSTALL TOP MODELS IN YOUR HOME

"Have the top model of whatever current merchandise he sells installed in your home—even if this means changing several of your appliances each year.

"Run your own product analysis laboratory for him and tell him both the good and the bad things about his product from your standpoint. Your opinion here will more nearly reflect the views of his customers than the advice he gets from most other sources.

"Keep your kitchen and laundry as attractive and neat as possible. Make it a point to show them to all visitors. While you naturally don't want commercial activity to spoil your social life, many a dealer complains that his friends buy elsewhere when the trouble lies in the fact that he hasn't asked them for their business.

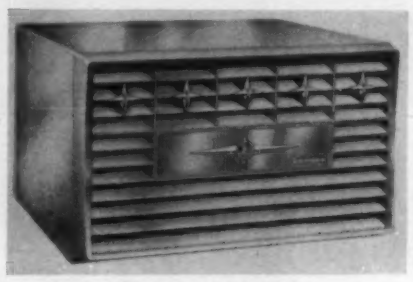
HELP INCREASE HUSBAND'S BUSINESS EFFICIENCY

"The second fundamental way that you can help your husband in the appliance business is to increase his business effectiveness.

"First, develop your ability to ask him questions. Don't ask him day after day, 'How's business?' 'What's new?' But when the day's conversation gets to talking 'shop' challenge his thinking (probably no one else has. When he plans new moves, new programs, and new lines that he is enthusiastically telling you about, try this technique . . . just ask him 'Why?'

"Secondly, you can increase his business effectiveness by encouraging him to plan his work. . . . If you feel that he could accomplish more in less time, and that there is too much anxiety and hurry in his activities, you can help him develop a balanced schedule. . . .

"When you encourage him to plan his work, you have probably done the one think that will help him in his business more than anything else. And remember that better work habits make for more balanced time both at work and at home."



Emerson room unit.

Emerson Line--

(Concluded from Page 1, Col. 2)

let.

Abrams said the exclusive new Emerson portable air conditioner "can be easily wheeled from room to room and installed in approximately one minute without the use of tools. Since it can be used in the living room, or any other room, during the day, and in the bedroom at night, it is like owning two units for the price of one."

An outstanding feature of the entire Emerson "Super Compact Series" is the exclusive "Flexible Mounting" permitting the units to fit any window, including casement windows, and to be easily adjusted to 15 different positions, ranging from completely inside to completely outside the room, Abrams declared.

He added that this feature, in addition to satisfying personal decorating preferences, permits adjustments that will meet requirements of landlords or city ordinances.

Among the other features of the 1955 line, Abrams concluded, are the single knob control located in front of the unit; "easy installation by the householder"; "super quiet" resulting from the rubber-mounted, permanently-lubricated fan motor; built-in and plug-in thermostats; and "instant cooling" with the new "Five-Star Power Plant."

Models and prices of 1955 room air conditioners were announced as follows:

SUPER COMPACT SERIES

Model	Capacity	Suggested List
E3D1*	⅓ hp.	$189.95
E5D1*	½ hp.	239.95
E5C1†	½ hp. (7½ amps)	299.95
E7D1*	¾ hp.	299.95
E7E1‡	¾ hp.	329.95
E7D2*	¾ hp.	299.95
E7E2‡	¾ hp.	329.95
E7D8*	¾ hp.	299.95
E7E8‡	¾ hp.	329.95

SUPER CUSTOM SERIES

E10D2*	1 hp.	399.95
E10E2‡	1 hp.	429.95
E10D8*	1 hp.	399.95
E10E8‡	1 hp.	429.95

*Standard
†Special
‡Deluxe

REVERE

DRYSEAL

COPPER REFRIGERATION TUBE

Not one but two crimps are made in each end of DRYSEAL. This is the final step in manufacturing, that immediately follows a special cleaning and dehydrating operation, which keeps dirt and moisture from entering the tube.

The seal is made in such a way that the diameter of the tube does not change, which permits DRYSEAL to be passed through any opening large enough for the tube itself.

As for bendability—the soft temper of the copper used in DRYSEAL allows you to make the most intricate bends by hand. And its ductility and soft temper make it extremely easy to flare for compression fittings without danger of splitting. Economical tube sizes range from ⅛" to ¾" O.D.

In addition, the DRYSEAL carton has been attractively designed for easy identification in stock. It contains one 50-foot coil of DRYSEAL . . . is easier to handle, light weight, economical.

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BEVERAGE COOLERS AND INSTANTANEOUS DRAFT BEER COOLERS.

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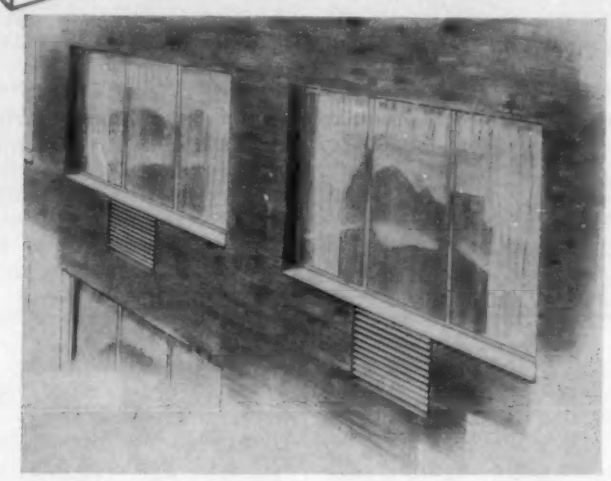
ROOM AIR CONDITIONERS



EXTERIOR VIEW of new room unit for air conditioning apartment buildings which will be used for the first time in the luxury apartment building at 20 East 68th St., New York City. The system used in this building utilizes independently operating, individual room units.

Apartment Cooling Technique

Best Features of Central System and Room Air Conditioning Combined for Individual Control, Ease of Maintenance

NEW YORK CITY—A new technique for air conditioning apartment houses, which is said to combine the most favorable features of centralized systems and window-type room coolers, will be used for the first time to air condition the 16-story and penthouse apartment building under way at 20 E. 68th St.

This was announced jointly by David Rose, head of David Rose & Associates, owner-builder, and Carl E. Buchholzer, president of Airtemp Div. of Chrysler Corp.

The new system utilizes independently operating, individual room units specially designed and built into the exterior wall. The cooling operates independently of the heating system which is of the baseboard radiation type.

The new Airtemp Construction Corp. unit has been designed to meet the demand for an air conditioner which has no projection from the outside of the building.

"In the interior," it was stated, "the new unit is virtually flush, and does not interfere with the furniture or draperies nor with the opening or closing of windows.

"The new apartment air conditioner has been engineered for silent operation. It requires no water or piping. Featuring functional styling and beauty, it is being released by Airtemp Construction Corp. in ½, ¾, and 1-hp. sizes."

The three are identical in size (27⅛ in. wide by 22¾ in. high by 17½ in. deep) to permit uniform construction of the wall enclosures regardless of the cooling requirements of each room.

"The unit fits into the wall, under a window, and does not block the view or daylight," it was explained. "Thermostatic control of the cooling is provided to suit the comfort of the occupant. Other features are filtered outside air, exhaust air, and adjustable grilles.

"In the use of the new unit, the control of air conditioning is decentralized. The temperature of each room is controlled by the tenant. Units may be operated as needed throughout the year, and no air conditioning engineers are required to stand by," the announcement said.

"Heating and cooling are entirely separate and each is under the instant control of the occupant. Because every tenant is metered individually for the cost of operating his cooler, no tenant pays for the general air conditioning which is the case in a central system."

Designed by Boak and Raad, architect, 20 E. 68th St. will provide 93 apartments in a wide variety of layouts ranging in size from two to six rooms. Douglas L. Elliman & Co., Inc., is the renting agent, with executive vice president John F. Hamlin in charge.

Biggest Bargain Ever Offered
TO OUR BIG INDUSTRY

Every phase of air conditioning and refrigeration selling—store layout, and display, financing, inexpensive advertising, dealing with manufacturers and distributors, selecting and getting the most out of salesmen, outwitting competition, making a profit on trade-ins and service, etc., etc.,—covered completely in a 638-page encyclopedia:

"BOTH FEET ON THE GROUND"
by GEORGE F. TAUBENECK

This book wasn't dreamed up—it was *lived*. Consists almost entirely of "case histories" drawn from interviews with dealers all over the country. All your questions answered by *successful appliance merchandisers* who have worked them out in practice. Profit from the other fellow's experience!

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INSIDE DOPE

Learn to live and laugh—
Thus delay your epitaph

By GEORGE F. TAUBENECK

(Concluded from Page 1, Col. 1)

"Gloomy Gus" Henderson of the Lions was so righteously indignant that he told Alex he (Gus) would refund the fine to him out of his own pocket.

Back home in Detroit the Lions watched movies of the game. Clearly it was shown that Wojie missed Goldenberg's chin by a foot.

Screamed Henderson:

"You're fined $50 more for not connecting!"

Source of this true story: Johnnie Pingel, the All-American from Michigan State who halfbacked for the Lions in that game. Johnnie now is a respected advertising executive with Brooke, Smith, French & Dorrance—devoting his time to *Deepfreeze.*

Air Conditioning vs. Cancer

Cigarettes? Cancer? Suspicion is growing that environmental atmosphere (whew!) causes lung trouble. The film on the outside of your windshield or windows is the same oil you breathe. K. T. Keller told us that recently he went to a directors meeting on the 56th floor of the Chrysler building where he found a faulty air conditioning outfit. He investigated it himself and discovered that the filters were clogged. So he ordered research on the material that was doing the clogging. To his astonishment, more than 30% of the black muck was rubber—ground off tires of Manhattan's motor vehicles. Who wants to breathe rubber? And what else is in what we breathe? We have no sustained, adequate research on this great health problem excepting the one started by Dr. Henry Vaughan of the National Sanitation Foundation. His laboratory will be right here in Detroit, for the nation's benefit.—HARVEY CAMPBELL.

Progressive (?) Education

"A friend of mine whose young daughter attends a 'progressive' school was 'round one evening to a parent-teacher 'get-to-gether,' writes Victor Hawkins of Copper Publications.

"His daughter's English teacher said to him, 'Of course, this year we can't expect to teach your child a great deal about English language, but we can teach her to be a good citizen.'

"Her arithmetic teacher said, 'We can't expect to teach your daughter a lot of arithmetic this year, but we can teach her how to get along with people.'

"Her geography teacher said, 'We can't teach your child a lot about geography this year, but we can teach her how to adapt herself properly to her social environment.'

"My friend returned home wondering how his daughter was going to get what he called an education.

"What he wanted for his child was plain, old-fashioned drilling in reading, writing, arithmetic, geography, and history.

" 'They're putting so much emphasis on the trimmings,' he said, 'that they're forgetting the fundamentals.'

"That's exactly what's *happening* in business, too, these days."

They'll Just Worry Us to Death

Nearly every profound scholar declares that Arnold Toynbee is the wisest historian in the world today.

What does Toynbee predict in his latest book? Good news—we think—

"World War III," he opines, "will be not a shooting war, but a nerve-wracking period of strain, which will end decades from now undramatically."

(No atomizing, thank God!) Also he forecasts:

"I expect the great religions of the world to stay on the map. People will choose their religion rather than inherit it. Religions themselves will take more and more from each other. Political and economic life will become very dull, and religion is therefore bound to become more popular."

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Series "A" and Lau-Pak Gold Seal Bearings
Self-Aligning Pillow Blocks
Lausteel Variable Speed and Constant Speed Pulleys
Put your Problems up to Lau
If they involve the above, or Belt-Drive and Direct-Drive Blowers, Wheels, or Fans. Request Lau Blower Catalog 707.
LB-5-55

Quality engineering and advanced design are characteristics of every **Lau** component for air-handling equipment. **Examples:** the five units illustrated here. No matter how large or how small, how intricate or how simple, if you buy it from **Lau** you know it will live up to every claim made for it. That's why leaders in air conditioning, heating, ventilating, oil burning, refrigeration, and automotive accessory equipment manufacturing rely on **Lau** for standard and special items.

LAU SERIES "A" BEARINGS • LAU-PAK GOLD SEAL BEARINGS

Series "A": self-aligning, self-oiling bronze bearing held in the housing under uniform spring pressure. Large capacity oil reservoir. Bore sizes: ⅝", ¾", 1", and 1 3/16". **Gold Seal:** requires **no additional lubrication;** ample supply of plastic petroleum sealed in housing. Bore sizes as above.

LAU SELF-ALIGNING PILLOW BLOCKS

Lightweight, low-cost, oil-tight steel housings with porous bronze bearings. Hold **much** more oil than cast iron types. Long bolt slots permit interchanging with other makes. Bore sizes: ⅝", ¾", 15/16", 1", and 1 3/16".

LAUSTEEL VARIABLE SPEED AND CONSTANT SPEED PULLEYS

Variable Speed: allow speed variations up to 30%, thus assuring noise-free, efficient operation for many drive combinations. Diameter: 3¼" OD. Bore sizes: ½", ⅝", and ¾". **Constant Speed:** for use with both "A" and "O" section belts. Give better performance with less friction, longer belt life. Diameters of 6" to 10" inclusive.

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LAU World's Largest Manufacturer of Air Conditioning Blowers

Top Executives Offer 'Different' Ideas for Commercial Sales

For the commercial refrigeration distributor or dealer who is wondering what he might do to improve his sales and profitability in 1955, the three discussions published here might give him considerable assistance.

These are condensed versions of the thoughts presented by three of the top sales executives in the commercial refrigerator field at the last annual meeting of the National Refrigerator Sales Association.

The discussions offer some "different" ideas about sales and management efforts that the man in the field can find helpful if he applies them properly to his own business.

Single Case Sales to Little Merchant Can Save Store Owner, Salesman—Prince

NEW YORK CITY — Getting back to selling single cases to the small independent neighborhood grocer can become the real salvation of the commercial refrigerator salesman and will help rehabilitate thousands of little independent food stores all over the country, believes Leon Prince, partner in the Bally Case & Cooler Co.

Prince pointed out that the reason these small independent stores are not doing business is that they are attempting to merchandise in 1955 like they did it back in 1934.

"This just won't work today," he said. "These people (mostly middle aged widows or widowers who are in business for life) must do something to emulate the merchandising principles of the larger supermarkets.

"We say they have to do something. That doesn't mean a complete remodeling job, increasing the entire store, putting in a new front, buying air conditioning, and a dozen and one other costly things that would frighten this little type of merchant.

Help Owner Do Things In His Financial Scope

"It doesn't mean that at all—what I think it means is for them to do the things within their power to do; namely, clean up their stores, rearrange the stock, install one or perhaps two new cases—that is the single case deal of which I speak.

"Now, there is no magic formula to get these orders. You and your salesmen must work hard to get them. There are no short-cuts to get them. It is just old fashioned work, seeing enough people and constantly promoting the idea of installing one case.

"A salesman should always work on the theory—these small stores can be brought back to a good vigorous merchandising life.

"Now, the change we are going to work in these stores is not spectacular. We are not going to make the owners millionaires. We are just going to revitalize them, so they can get back the neighborhood business they formerly enjoyed.

"We won't curb the chains—it simply means these small stores will get more business, they will prosper, and the large chains will lose a little business, and believe me, they can afford to, and they will still prosper.

Don't Set Sights Too High

"In promoting the idea of individual case sales, don't aim your sights too high. That is a mistake made by too many salesmen trying to get a big deal when they should be satisfied to settle for a little deal.

"I have seen it happen dozens of times, right in our own plant. Dealers would bring customers into the showroom—instead of closing a fast order for one or two cases, the salesman delayed doing that in favor of trying to foster a complete store change-over.

"Naturally, the merchant was hesitant and perhaps frightened. It involved so much money the merchant couldn't make his decision. By the time he got around to making a decision, weeks later, three other competitors were on the job.

"Prices were pared down and, in retrospect, it is simple to see the dealers would have been far better off to push for a fast order when the merchant was in the showroom.

"I am not, for a minute, trying to tell you every small store you contact with this story would result in orders. What I am saying, and I speak from years of experience, is that a good salesman who decides to follow this approach and with real, honest-to-God, hard work can do a real volume of business, selling this class of merchant.

"What you gentlemen must do when you hold your next sales meeting is to indoctrinate your salesmen—pound into their selling philosophy that here's a program which is their real salvation.

"The advantages gained from selling some of our merchants are many.

"First of all, to you, as a dealer, it is going to mean profitable sales. Most of this type of business is created, and the order is closed before competition gets on the job. There are many small single case orders, which yield as much, if not even more profit to the distributor and the salesman as you might get from the sale of six cases to a larger store.

"Secondly, to you as a dealer, it means the elimination of risk—of losses on repossessions. As a rule, these little stores won't fail, and you have a minimum amount of money tied up in each deal. It simplifies your financial problems.

Resale Value Considered

"Should you be faced with the necessity of a repossession, you have a basic fixture you can sell, not broken-down shelving, or scarred gondolas, but a display case that can be sold to another small store.

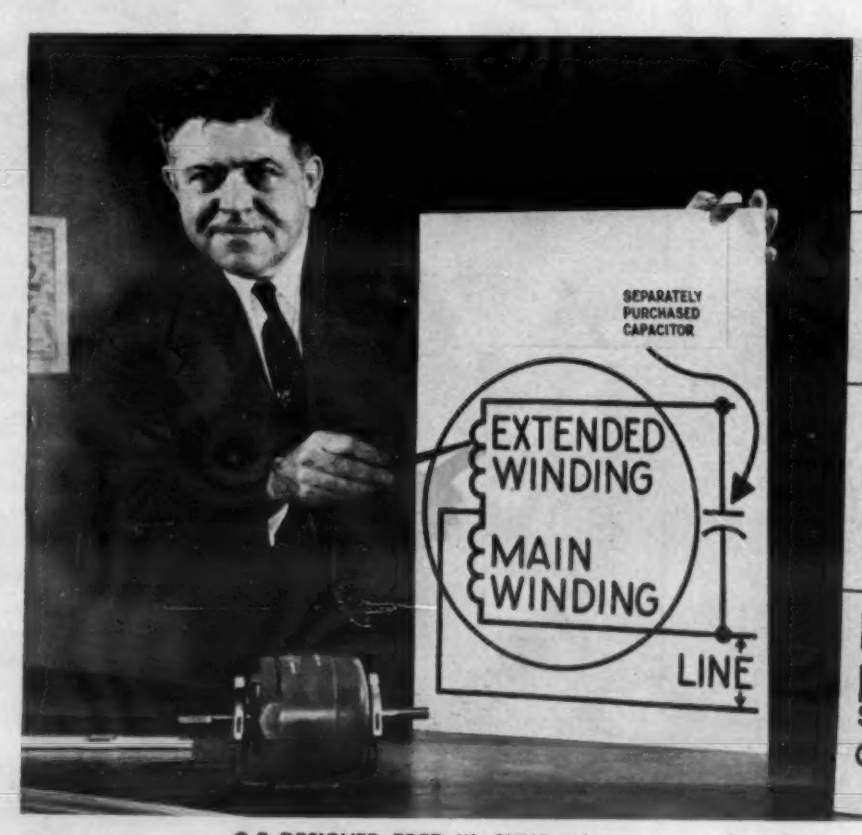
"Thirdly, it is the greatest tonic you can possibly give to a salesman. With the salesman working on a big deal, it's a long time between drinks, and nothing discourages a good salesman more than his inability to sign an order for a few weeks.

"But, let this same salesman write an order every week or 10 days, you will notice a sparkling change in his personality. There will be a smile on his face and a 'spring' in his step. You will have a happy salesman—a real asset to you and your business."

SETTING THE PACE IN MOTORS FOR THE AC&R INDUSTRY

CONVENTIONAL SHADED-POLE MOTOR
on this ¾-ton room cooler results in these readings:
Current: 13.95 amps P.F.: 81.7%

Side-by-side test proves new G-E



Type of motor	input current amps.	power factor
low priced standard shaded pole	2.60	50%
med. priced extended winding shaded pole	1.46	89%
higher priced split capacitor	.92	86%

G-E DESIGNER FRED W. SUHR points out extended winding on diagram of new G-E shaded-pole motor. Difference between this and standard G-E shaded-pole motors is internal; the over-all size and mounting dimensions are unchanged. Ratings: 1/20 to 1/12 hp.

COMPARISON CHART SHOWS that new 1/20 hp G-E extended-winding motor has optimum combination of cost and operating characteristics for a 1/2-ton room cooler.

Know Your Product Line and Your Competitors', Tyler Tells Sales Managers

NEW YORK CITY—The No. 1 objective of the sales manager is to know his product line absolutely and thoroughly, stated R. L. Tyler, president of Tyler Refrigeration Corp.

He is the one man in the organization who must know product, Tyler emphasized, and he should know the competitive products almost as well. But not to talk about them.

"Keep your mouth shut, but your ears open when it comes to competitive products," he advised.

The second job of the sales manager is to know his market, for markets vary.

"Then, by all means, always have your sales manager know the limitations of product," Tyler continued. "It is highly probable that failure to know limitations of product is most expensive for you and for us in this business.

"Don't attempt to do a job with a half-ton truck when you need a two-ton truck. Teach limitation of product to your people. Don't let them say this thing or that thing is a panacea," he urged the distributors.

Watching sales costs and recommending to management budgeted sales costs is another important part of the sales manager's job, he noted.

He continued:

"The 'Father Confessor' attitude is important. The sales manager should be selected by seniority and he should help overcome the basic weakness of the individual salesmen on the force. There is only one way to learn those weaknesses and that is to actually work with the man at the prospect level.

"The obtaining of help from the factory is one of the most important things on my list.

"But to send a man (knowing present day traveling costs and salaries) and then have him sit around all day and listen to the fact that Joe Blow has a double-duty meat case that is leaking or to leave an expensive demonstration unit sitting before the door, irks me beyond reason.

"The duty of the sales manager is to make sure at all times that the factory man is used when he is there. Even if he isn't a star! He can be made into a star with a bit of clever work on your part.

"The last thing I have on the list is most important. The duty of the sales manager who has product lines is *always* and *always* and *always* to defend to his men the product lines which his company handles and the management of his company—at all times, and to permit no deviation from it within his hearing."

Commercial Refrigeration

How You Manage People, Money, Future Plans Spells Success, Failure—Biddle

NEW YORK CITY—He is a very busy man who has little or no time for future planning. No matter how small or large his business is, that is one of his biggest problems.

So declared A. B. Biddle, vice president of the regional accounts division of Hussmann Refrigeration, Inc.

Good management, whether in a large, medium, or small business, breaks down into three categories, according to Biddle. They are:

1. Managing people.
2. Managing money.
3. Planning for the future.

"The art of managing people is a very important one because people are the business," Biddle declared. "You can have money, machines, and all other facilities, but without the right people, without a team, you cannot succeed.

Develop Men for Top Spot

"One of the biggest problems facing any distributor is the need to develop a number two and number three man in his organization. The time will surely come when you need these men to step in and assume top management.

"Will they be ready? Will they be thoroughly trained? Will they understand your business, your policies, and the opportunities which lay ahead in this business?

"You have three main departments to organize and develop: Sales, Service, and Office. All are important. Each of these presents problems of developing the right kind of manpower.

"To build a sound and last business it must be profitable.

"A well run business is known by the records it keeps. What kind of records are we talking about? Inventory, accounts receivable, notes receivable, accounts payable, notes payable, bank account, petty cash, etc.

"Monthly balance sheets and profit and loss statements are of great importance. They should be secured within 10 days and not more than two weeks after the end of the month. These statements must be studied and the figures analyzed so as to give meaning and guidance to the business.

"Your bank and your suppliers will appreciate receiving copies of your statements at regular intervals. This will help to establish your reputation as a good operator and your credit.

What Does Banker Look For?

"In looking at a financial statement there are many important points which your banker will check. What is your ratio of current assets to current liabilities? A good sound ratio is two or three to one, or better.

"What is the proportion of cash in hand and cash in the bank to current liabilities? A good rule of thumb is 25%.

"How much actual working capital do you actually have in your business? It is the difference between current assets and liabilities.

"How many times per year can you turn over your working capital without getting in a tight spot and straining your business to keep on an even keel? Many good operators figure about five to six times as a maximum.

"Cash and all receivables should exceed current liabilities.

"Inventory should not exceed 50% of current assets.

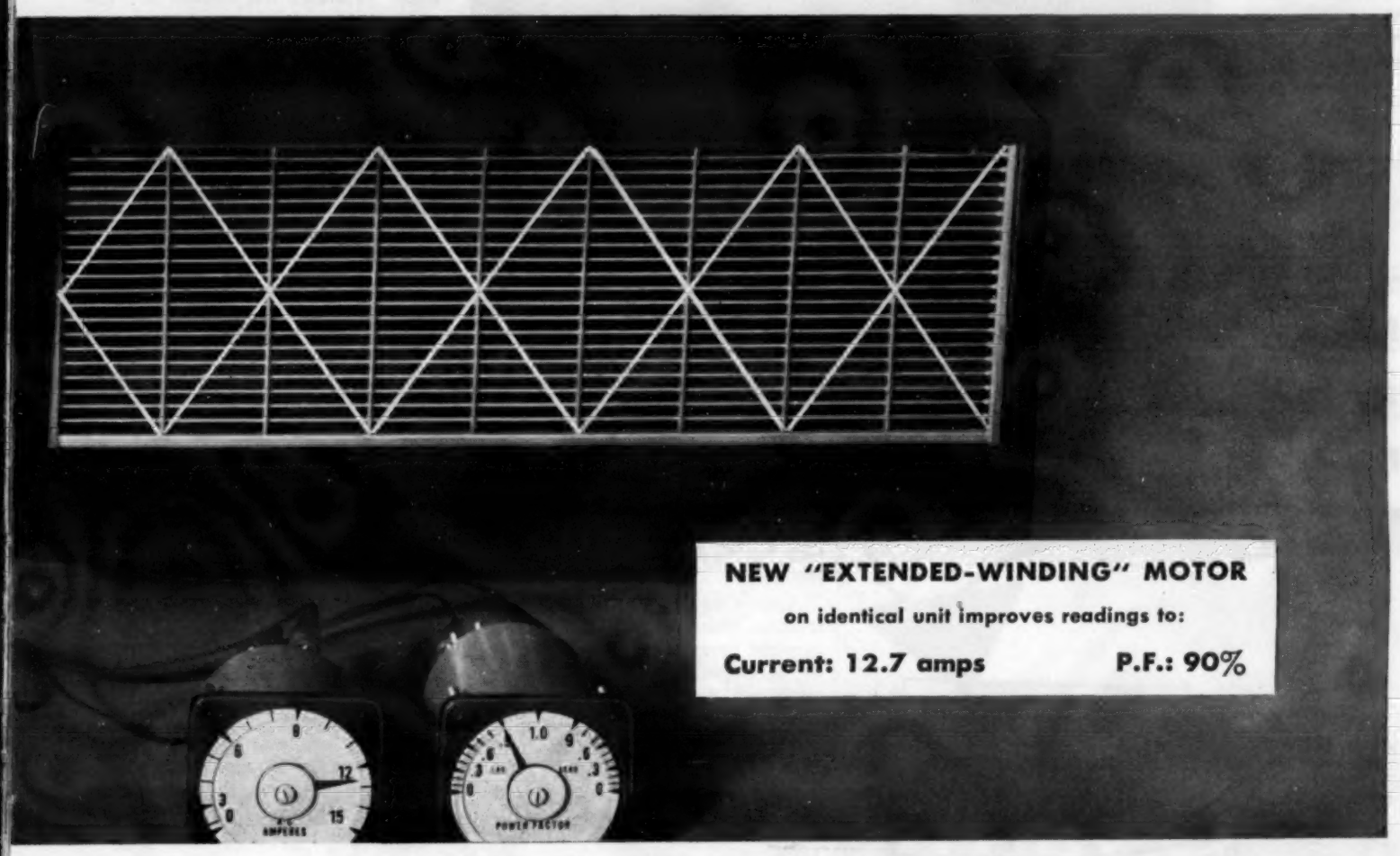
"Inventory should not exceed 70% of working capital.

"What inventory turnover should we expect? Most successful distributors figure about six to seven times per year.

"Most of these figures came from a recent survey which our company made of about 100 distributors.

"Another point of interest is the net worth of your company. Is a great part of it tied up in fixed assets? Or could you easily convert it into cash or the equivalent if necessary? It is good business to maintain a fairly liquid position.

(Continued on next page)



"extended-winding" shaded-pole motor cuts current, boosts power factor

General Electric's "extended-winding" motor embodies a new concept in shaded-pole motor design. As proved by the side-by-side test above, this new motor helps provide a low-cost answer to coming power-factor and current restrictions on room coolers.

HERE'S WHY: This new design combines the inherent economy of the shaded-pole motor with the cost-saving advantages of an inexpensive 285-volt capacitor. When operated as a combination evaporator and condenser motor on ¾-ton units, the new G-E extended-winding shaded-pole motor's current and power-factor performance fully meets the needs of the new restrictions. On ½-ton units, the motor also performs within requirements provided the rating of the compressor-motor capacitor is moderately increased.

HERE'S HOW IT WORKS: Designed by a G-E engineering team headed by Fred W. Suhr, the new G-E extended-winding motor makes use of an old principle. The number of turns on the stator winding has been "extended" to simulate an auto-transformer. This effectively steps up voltage across the capacitor to 285 volts, boosting the capacitor's effectiveness more than 6 times. Result: full-load current is almost halved, power factor exceeds 85 percent.

DESIRED FEATURES of standard G-E shaded-pole motors are retained in the new G-E extended-winding motor. For example:

- **Sealed-in lubrication** makes provision for motor re-oiling unnecessary in your design.
- **All-angle** unit-bearing design makes it possible for you to mount motor in any position.
- **Multi-speed operation** is possible with the use of a separate resistor or reactor.

FOR FULL INFORMATION about this latest G-E motor advancement for the air conditioning and refrigeration industry, contact your G-E Apparatus Sales Office. Or write for Bulletin GEA-6282 to Sect. 704-44, General Electric Co., Schenectady, 5, N. Y.

Progress Is Our Most Important Product

GENERAL ELECTRIC

No Future Planning = No Future Business--

(Concluded from preceding page)

"Good inventory records are very important. Inventory must be kept moving to avoid depreciation and obsolescence. It is good business to practice FIFO method—'first in—first out.'

"Accounts receivable must be kept current and collectible. Notes receivable and accounts receivable should be aged so that prompt attention is given to past due accounts before they can really become troublesome.

"A good record of paying bills when due builds the kind of reputation which helps to build a business. Guard your credit jealously and it will repay you many times.

"No doubt there are other points to be considered in managing money but the ones we've covered are of major importance.

"Management has the responsibility of planning and helping to coordinate the planning of all departments.

"We all accept the fact that we benefit by planning our sales objectives. Certainly most men enjoy working against a quota for their territory which has been carefully and fairly set.

"Too few distributors do the same thing in setting a budget for the next year's operation. Why not set a mark to shoot at? We know what our average expenses should be. We can figure a reasonable sales volume to shoot for and we can establish a reasonable gross profit percentage.

"What is your dollar overhead per month which you must make to break even? Use it as a guide and then set out each week and each month to beat it. Why not educate your entire organization to know and understand overhead expenses, costs, and gross profits?

"I know some distributors here represented who have done that. They tell me that their salesmen are stronger, better armed, and that they can smell a phoney deal, if some price cutter is at work, immediately.

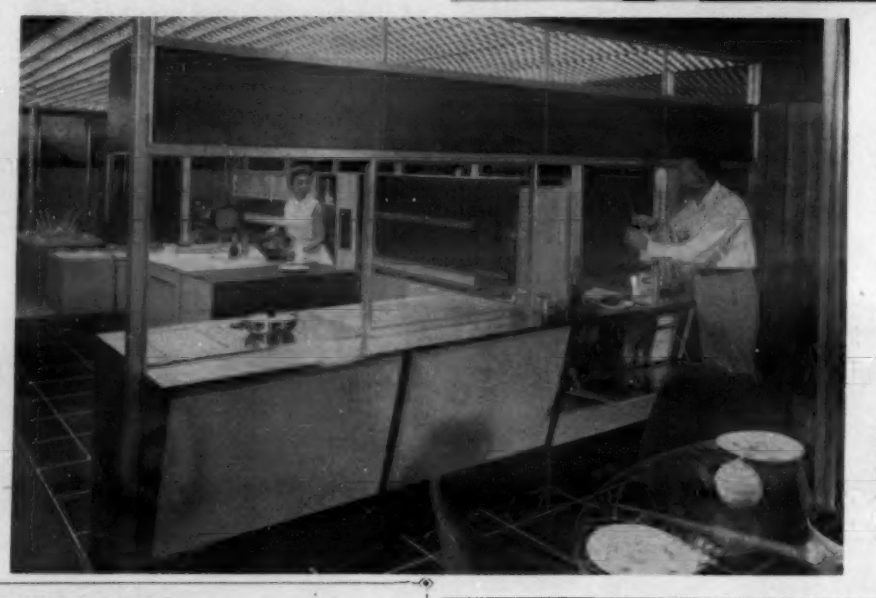
"One of managements big responsibilities is the planning and executing of good financing plans for handling instalment payment or time sales. There have been many plans tried and some of them have resulted in disaster for companies and distributors alike.

"The financing of food store paper is a very good business and the industry has a good record which we all should work to preserve. The manufacturers have agreed on standard terms—20% down and a maximum of three years on larger contracts.

"Distributors for the most part have supported these policies and have prospered.

"Weak credits, small down payments, long terms are the sure work of weak selling and go hand in hand with price cutting."

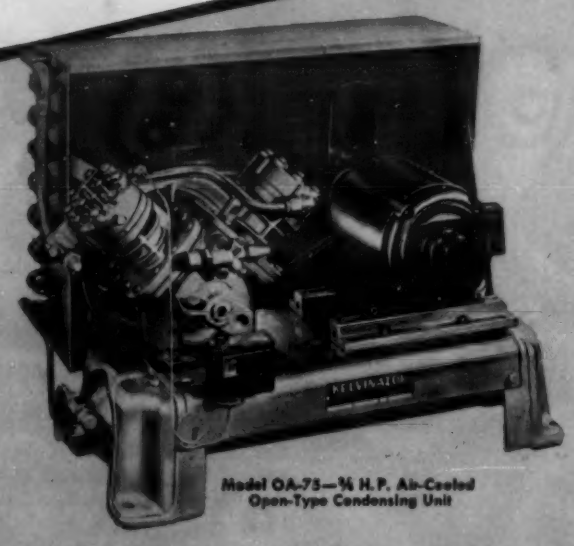
Kitchen of Tomorrow



ABOVE: ARRAYED ALONG a 12-ft. wall of Frigidaire's Kitchen of Tomorrow are four refrigerated appliances. The counter-top unit at extreme left is a beverage cooler. The upright white appliance (center left) dispenses a choice of ice cubes, crushed ice, or cool water. Next, with both doors open, is a food freezer-refrigerator. The refrigerator occupies the top half, and individually operated doors slide open and closed. At extreme right is a moist-cold refrigerator that rolls out like a file drawer. It maintains proper temperature and humidity for fruits, vegetables, eggs, butter, and meats.

LEFT: GLASS PANELS in Frigidaire's 1955 Kitchen of Tomorrow can be pushed aside opening patio (foreground) to kitchen. Appliances, such as oven and range surface units, can then be used and controlled from either inside or outside, and there is a refrigerated bar built into the exterior wall of the house for patio use.

Get ALL the EXTRAS at NO EXTRA COST
Get Kelvinator
Open-Type Condensing Units



Model OA-75—¾ H.P. Air-Cooled Open-Type Condensing Unit

EXTRA LARGE! Air-Cooled Condensers

EXTRA LARGE! Receivers

EXTRA CAPACITY! Water-Cooled Condensers

EXTRA! Heavy-Duty Construction

EXTRA! Easy-to-Service

NO EXTRA INVENTORY COSTS! $25. will cover your parts investment for all models in seals, valve plates, gaskets, etc.!

Kelvinator offers a precision built line of open-type units famous for dependable performance and trouble-free service, yet they are priced realistically, let you meet any competition. A complete line of air-cooled, water-cooled, combination air- and water-cooled, and truck type from ¼ H. P. air-cooled through 5 H. P. water-cooled.

Model K352CR, ¼ H.P. Capacitor Start

Kelvinator *Polarsphere* Internally Mounted, Hermetically Sealed, Condensing Units. A complete line from 1/5 H. P. through ½ H. P. for a wide range of applications.

Packaged For Profits! KelvinatorSealed Compressors. Complete packaged compressors for household and commercial cabinet replacement now available from Kelvinator, for the first time. (Model DK 352C ¼ H. P. capacitor start, illustrated.) High capacity, competitively priced compressors. 10 models. ⅛ H. P. through ½ H. P.

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Kelvinator

Specialists in Refrigeration Since 1914

FTC Plans To Crack Down on Violators of Cease-and-Desist Orders, Unfair Practices

WASHINGTON, D. C. — "Flagrant" violations of Federal Trade Commission cease-and-desist orders have been discovered in a wide spread compliance survey, FTC General Counsel Earl Kintner has reported.

According to Kintner, the commission plans to take court action against firms which have persisted in monopolistic or unfair trade practices despite such orders forbidding it.

The survey was ordered by FTC Chairman Edward H. Howrey when he found that in 4,000 of the 4,500 old cease-and-desist orders in force, the commission had practically no knowledge whether the orders were being obeyed or not. No check-ups were made.

"We are reviewing 100 cases each month," Kintner said, "and we are finding many technical violations which can be cured by consultation with the companies concerned merely by pointing out the manner in which the terms are not being met. But we have also found many flagrant violations which we must take to court."

Kintner said that while the FTC is embarking on a policy of making greater use of voluntary procedures to avoid improper competitive and advertising methods, the commission has also instituted a program of "hard-hitting enforcement, wherever we find unwillingness to comply."

More cease-and-desist orders and more complaints have been issued in the past five years than in any other previous five-year period, Kintner added.

MISSING SOMETHING?

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Personalized 'List Price Package' Can Be Answer To Discounters, George Johnston Tells NARDA

SPECIALTY SELLING METHODS

CHICAGO — Appliance dealers will get more than their share of business if they have a personalized "list price package" to offer as a substitute for a discount.

So delared George Johnston, president of Johnston's, Inc., Minneapolis, at the recent annual convention of the National Appliance & Radio-TV Dealers Association.

He said this package should include a "prestige" product, a complete trade-in program enthusiastically promoted, one's own service shop and credit and collection service, and a policy of guaranteeing customer satisfaction.

"In today's market, how do we justify selling at list price?" Johnston asked. "Or, looking at it from a little different angle, what are we selling as a substitute for a discount?

"Ours is a competitive industry. It was highly competitive back in the 1930's. It is today. . . . Let's face it—we are going to have to live with off-list price competition for a long time to come. . . .

"Let's throw out the wishful thinking. Let's ask ourselves this very fundamental question: 'When so many are selling at a discount, are we delivering a list price package?' What have we got to offer that we can sell to the public . . . as a substitute for a discount?

"The answer seems obvious," Johnston said. "If we are to grow and prosper in the major appliance business, we must have more than place and time utility to sell (most every discounter has that).

"We must have a valuable, personalized package to sell. . . . We, in our stores, must add conveniences and benefits that enhance the value of the merchandise and make the complete transaction worth our asking price in the mind of the customer.

PRESTIGE PRODUCT

"First, of course, we should start with a product whose prestige the supplier respects. A product that hasn't been kicked around from hell to breakfast . . . a product backed by limited dealer franchising. A product maybe not virginally pure, but almost.

"And then we should get wholeheartedly behind that product and help make it the most wanted product in our community."

'USED' RESPONSIBILITY

Johnston continued: "Starting from there, there is one benefit that, at the time of purchase, looms larger than most others to the customer. That benefit is complete and enthusiastic dealer acceptance of the 'used' responsibility.

"I don't mean taking trade-ins on a shot-gun-wedding sort of a basis; not a grudging, half-hearted sort of a basis. The customer expects us to be in the used business enthusiastically and with both-feet. . . .

"We've got to have repair shops, re-finishing facilities, and spray booths. We've got to have decals and bright little inspection tags and guarantee forms edged in gold. (At our store, we call this part 're-manufacturing').

"It is our job to decently display used merchandise . . . to promote and advertise used merchandise—not just stinking little classified ads, but as a part of our display advertising program as well.

"And it should be considered a cardinal sin in our business to sell off our used appliances to other dealers in bulk. We are retailers, and the only way we can come out is to sell our 'used' at retail. It is up to us to dream up ways to get as much for our 'used' as we can, so we offer the customer as much as we can in trade when we are buying it."

Johnston added that used items often bring surprisingly high prices when properly merchandised. Referring to his own business, he said:

"Back in 1950, of our total appliance sales volume, only 3% or about $30,000 worth was in used appliance sales. We took trades but always kind of hoped we wouldn't have to.

"In 1954, things were different. We were really in the used business. . . . About 11% of our sales volume in 1954 was in used appliance sales—in dollars, over $110,000 worth.

"Get these comparisons: 3% used sales in 1950, 11% used sales in 1954, $30,000 in used appliance sales in 1950, $110,000 in 1954.

"Because of our 'used' emphasis in 1954, we got both new and used business that we otherwise would never have had. Because of our 'used' emphasis, our total 1954 volume was as high as any year ever, and so were our profits. And everyone who works for us made more money."

OWN SERVICE SHOP IS STRONG POINT

Having one's own service shop, Johnston said, is another customer benefit that goes hand-in-hand with the used business.

"Without 'service' and without 'used,' I'm just a broker," he declared. "I'm not really a dealer. . . .

"How about centralized service? I say that any dealer who farms out his service is not giving a list price money's worth because he is putting the poor customer in the cross fire of split personality and buck passing. Central service can never have the appeal to our customers that our own service has, when we run it properly."

Besides trying to have a first-rate shop, Johnston pointed out, the dealer also must train his salesmen to sell the service shop "and sell it dramatically" because this helps close sales.

"And," Johnston said, "when warranty time is up you'll get the out-of-warranty service, which today is profitable in its own right. And your shop will be a constant source of new sales."

CREDIT, COLLECTION SERVICE

Another important part of the list price package is to have one's own credit and collection service, Johnston told the dealers.

"You don't have to be a millionaire to do it," he asserted. "In our store, we have always made our own collections and carried our own paper, even back in the days when we hardly had a dime. If you really want to, you can work this out satisfactorily with your banker or acceptance companies.

"And from the profit standpoint . . . it's funny but true . . . the customer who is awfully tough in sticking for an extra $5 trade-in allowance doesn't seem to give a tinker's damn whether your carrying charge rate is 6% or 10%. . . .

"Think what an advantage you have over competition when your salesman can say: 'We do our own servicing . . . you make the payments to us. If it doesn't work the way it should, DON'T PAY. Sign right here.'

"The credit department may shudder at that kind of talk, but the salesmen eat it up and the customers love it! Not only does it close a lot of business for you but afterwards brings them back past your goods every month. It gets your sales people better acquainted with your customers and gets you a lot of add-ons and repeat business."

USE PRICE PROMOTIONS SPARINGLY

Johnston also noted that price promotions should be used intelligently. Be careful not to scare away those who contend that "You get what you pay for," the speaker cautioned.

"And when you get them in, what then?" he asked. In answer, he quoted the credo of "one of the greatest salesmen that I know." This credo it: "(1) Presume that they are going to buy; (2) presume that they expect to pay the asking price;(3) and they won't let you down."

Johnston closed by talking about "plain, everyday people. . . . The people who buy appliances. If they appear to be 'hard shelled,' more often than not the 'hard shell' is a front to cover their insecurity.

"Sure they would like a bargain. But deep down they are not so sure that they know a bargain when they see one. They are afraid of making a wrong decision. . . . They aren't used to making big decisions. And decisions involving $200, $300, $400, $500 are big decisions for most persons.

"And so, to sweep these doubts and fears away the salesman says: 'If it isn't what you want when you get it home, send it back. Mr. Johnston insists that I tell you that. That is the policy of our store.'

"Here the customer's decision is kept small. You help him avoid a big decision. What kind of selling is that? It just happens to be the most wonderful sales closer in the world. It gets the goods into the home and keeps them there and brings the folks back for more. It's a 'pitch' that epitomizes your whole personalized package—satisfaction in use . . . the customer's best interests.

"It helps point up your integrity and the worth of the product. It relieves their mind of fear and worry. Here you have given a benefit that the price jockey down the street just doesn't understand. You have given security."

And when the dealer has given the customer this kind of package, Johnston said, "you'll get more than your share of the business . . . because you have given your customers more than their money's worth."

The Carrier FLAKEMASTER—the newest member of Carrier's ice-making family—even surpasses the cube-and-crushed models in ice-cost savings. Only 6¢ worth of water and electricity, at average rates, will produce 100 pounds of ice. Imagine how quickly a FLAKEMASTER pays for itself!

And just look at these other FLAKEMASTER sales features:

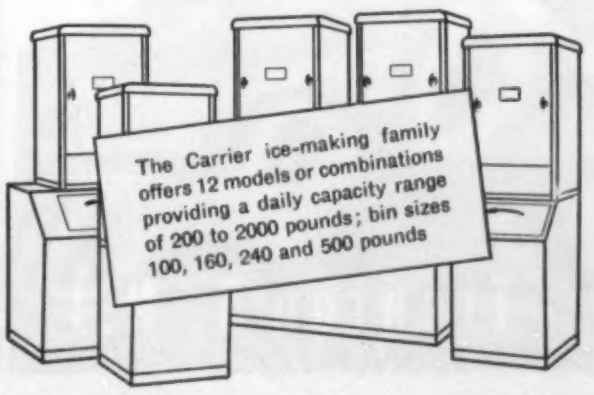
- **Hard, dry, easily handled flakes**
- **Simple, quiet operation with few moving parts**
- **Gravity delivery of ice into bin**
- **Automatic operation that keeps bin always full**
- **And many other features that add up to long years of efficient operation**

Water-cooled models make 1000 or 2000 pounds of flakes per day. Air-cooled models make 1000 pounds per day.

The Carrier FLAKEMASTER is a dealer's sales-making delight. It adds to his list of prospects such quantity ice users as: supermarkets and fish, poultry and fresh-produce markets; fish, poultry and meat packing houses; dairies, restaurants, hospitals, hotels, bars, clubs and numerous other large-scale users of flaked ice.

Now—more reasons than ever before to be a Carrier ice machine dealer: choice of 12 models or combinations to assure matching every ice user's needs exactly, realistic pricing policy, liberal dealer and customer financing plans, and full coverage promotion help. They all combine to make big and continuing profits for the alert dealer.

Mail the coupon below. Find out for yourself. Do it now.


The Carrier ice-making family offers 12 models or combinations providing a daily capacity range of 200 to 2000 pounds; bin sizes 100, 160, 240 and 500 pounds

Carrier air conditioning refrigeration

CARRIER CORPORATION, 310 S. Geddes St., Syracuse, New York

Tell me the *complete* story about Carrier's *complete* ice-making family. Also tell me how I can get in touch with the nearest Carrier distributor.

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THEY'RE HOPING THE BOSS WILL SEE 'EM AND THINK THEY'RE BIG WITH THE BRAINS...
CREEPLEY CLAIMS HE CAN FIGURE EIGHT MOVES AHEAD--ANOTHER BLOOPER ON THE BOOKS, AND HE'LL BE BACK IN THE SHIPPING DEP'T..
PLAY ALL LUNCH HOUR--THEN THEY DUCK DOWN-STAIRS ALL AFTERNOON TO THE COFFEE SHOP..
GENERAL MANAG
THERE'S A COUPLE OF THESE CHESS CHARLIES IN EVERY OFFICE...
THANX AND A TIP OF THE HATLO HAT TO DAVID AND DICK WRIGHT, 4826 N. LOMBARD ST., PORTLAND 3, ORE.
JIMMY HATLO
12-14
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"I have always felt that whatever the Divine Providence permitted to occur I was not too proud to report. The people are not served by pussyfooting, or by that sort of journalism in which nobody will ask who is the editor of a paper or the writer of an article, and nobody will care."—*Charles A. Dana.*

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Can the Run-of-Mill Dealer Survive Built-Ins and Color?

Two new trends pose a big problem to America's important refrigeration, air conditioning, and "white goods" dealers.

First is the arrival of COLOR in new lines of refrigerators, freezers, ranges, etc. Tough enough to stock eight models. But when eight models are multiplied by six colors, what's a neighborhood dealer to do?

Kelvinator's "cute trick" of providing a color-kit visual aid has been hosannahed by every dealer who's seen it. It does enable the dealer to stock just one color model, yet show prospect how her kitchen would look in any of the other colors offered. This may be the answer to color, providing the customer is willing to await delivery.

Second, the "built-in" problem. Obviously, these built-ins usually will be sold directly to speculative home builders. Dealers are used to that sort-of-thing. HOWEVER, when *standard* appliances are sold directly to builders and contractors, dealers can *replace* them when they become outmoded or tired.

Like color, built-ins have genuine appeal to many housewives. For a dealer to get into that business, however, there will be much to learn. In effect, he'll have to become a specialist in home decorating. To a somewhat lesser extent this is true of those who will push rainbowed refrigerators, freezers, etc.

All the above would indicate that the dealer of the future will have to be a considerably different "critter" than he is at present.

For quite awhile yet high-style pastel products probably will account for a small percentage of the total sold—and built-ins even less. So nobody's business is threatened as yet. The point is: the forward-looking dealer will begin to commence to prepare to get ready. He will have to be a *specialist* as never before. And he can't be a catch-all discount house.

At the NARDA meetings in Chicago these future problems got short shrift. The big item chewed over at those highly volatile and interesting panel discussions was discount selling—and how to combat it. Encouragingly, three solutions were presented:

(1) Request manufacturers to discontinue the mention of list prices in national advertising.

(2) Reduce dealer inventories from 90 days to 45 days, and get distributor cooperation in this regard.

(3) Hire and train *outside* salesmen—shades of the past: *doorbell ringers!*

Many NARDA dealers have sponsored canvassing crews successfully in recent months—which is the most encouraging thing this department has heard in years.

To a man these topnotch dealers reported that outside salesmen are not bothered much by price. They sell list prices—providing they themselves get a proper cut—and (of course) if they're well trained.

Right here is a wondrous development we haven't even heard *discussed* by a group of dealers in a dozen years.

Interestingly enough, it has been freezer "food plan" selling which convinced dealers that doorbell-ringing does pay off handsomely, and that it can defeat the discount houses.

To wrap up this discussion, let us say that, at an encouraging rate, the better dealers are returning to specialty selling—the practice which built our industry prior to World War II. And, in the future—when a dealer will have to be a specialized decorator—it will be his means of survival.

The MIAMI STORY: How One Commercial Firm Meets Competition, Handles Credit In Boom Town Which Suffers from Rapid Turnover

By George M. Hanning

MIAMI, Fla. — Take a quick glance through the refrigeration equipment section in the yellow pages of the Miami telephone directory and you will conclude that you can buy about any equipment you need from Tigar Refrigeration Co. on the Tigar meter plan.

That's the conclusion you are supposed to reach, according to the advertising designs of George Tigar, who is the Tigar Refrigeration Co. And your conclusion would be correct.

Tigar had between 25 and 30 listings in the yellow pages—all small advertisements and each featuring prominently the trade name of a popular brand of refrigeration equipment. Most mention the Tigar meter plan.

Tigar's strategy is aimed at the small merchant, the one he has been accustomed to dealing with over the past 30 years and more in the New York and Boston areas.

He figures that the small merchant with refrigeration problems will naturally turn to the yellow pages for help and will look for the name of the brand he owns. When he finds it, there is Tigar's name and telephone number. Then, whether he needs a new unit or service, Tigar is ready to serve him.

Mention of the Tigar meter plan also arouses the merchant's curiosity. Though Tigar's meter plan is no different from any other, the fact that he applies his name to it makes the prospect think it is something special. And, for the small merchants, it is a financing plan tailored to their particular needs. Proof of this lies in the fact that more than 75% of Tigar's business is on the meter plan.

Tigar's theory of selling is to provide the customer with what he needs to make a living. Don't oversell and don't undersell.

"If a merchant needs your equipment to make a living, he is going to pay for it. No man is going to cut off his own livelihood by giving up the equipment on which that livelihood depends," Tigar declared.

On that theory, he said, he has offered credit terms to persons who would be considered poor risks by other distributors and who would be poor risks for equipment not vital to their business.

This plan of action served him well over the years back home in Chelsea, Mass. He still owns a distributorship there, now operated by his son Gerry. The plan works well in an established community where people are settled and intend to remain in business for years. But in the restless economy of Miami, Tigar noted, the idea still applies, but he has to be very careful about his credit risks.

"Down here," he said, "there are so many floaters and fast buck operators who are here today and gone tomorrow that the refrigeration man must be more cautious about extending credit."

He pointed to an extreme case where a man ordered equipment one day and was out of business the next. In this situation, he said, he is placing more reliance on bank acceptance of contracts and is scrutinizing his prospects more closely.

Tigar's profuse telephone book advertising has gained him another advantage. He first opened for business here about a year ago and immediately flooded the book with his advertising.

This, he claims, gives the reader the impression that he is an established firm and must have been in business here for years. Many who call are surprised that he has been here for only a short time. He believes that this plan has brought him more unsolicited calls than many more established firms receive.

But, he asserts, "I don't consider that I am taking any business away from them. The business that calls me is business they wouldn't get anyway."

Tigar pointed out that he is able to advertise so many brands because of the wide contacts and favorable relations he has built up over the years with many manufacturers. When he needs a particular piece of equipment, he said, he can get it.

In addition to the high percentage of floater population, Miami's "boom town" conditions—the city is growing at the rate of 60,000 persons a year—and inviting climate also pose other problems to the small reffrigeration equipment distributor.

Once such problem is that he has plenty of competition from other small operators who are willing to sell their equipment at little above cost just to be able to stay here and soak up the sunshine, Tigar said. This makes it very difficult for a distributor intent on building up a business to do so.

Another factor is competition from the big chain stores that has practically eliminated the market for used equipment, he alleges. It is the practice down here, he asserted, for the chains, when they buy new equipment, to sell their old fixtures to small grocers at extremely low prices just to get rid of them.

This proved to be a great surprise to Tigar when he first began operating here, for he had pictured Miami as a good market for used equipment.

Adjusting himself to these conditions, Tigar said that he is finding his most profitable market in custom built equipment, giving the customer exactly what he needs rather than trying to sell standard equipment in open competition with other dealers.

He is also considering seriously going into the equipment rental field as an answer to the "floater" problem.

The Miami area, one of America's "dream places" which nearly every American hopes to see at least once before he dies, has a sub-tropical climate which is part of its great attraction. That same climate also makes the Miami area one of the nation's greatest markets for refrigeration and air conditioning equipment. And despite the fact that it is primarily a vacation spot, it is one of the fastest-growing areas, population-wise, in the entire country.

What's it like to do business in the air conditioning and refrigeration field in that part of the country? Assistant Editor George M. Hanning, after spending several weeks in the Miami area, has written a series of articles on various phases of the business.

This article describes how an old timer in the industry, but a newcomer to Miami, is adapting his extensive knowledge to an environment where his customers may not be too stable and his competition is willing to sell at little profit just to stay in business and enjoy the sunny climate.

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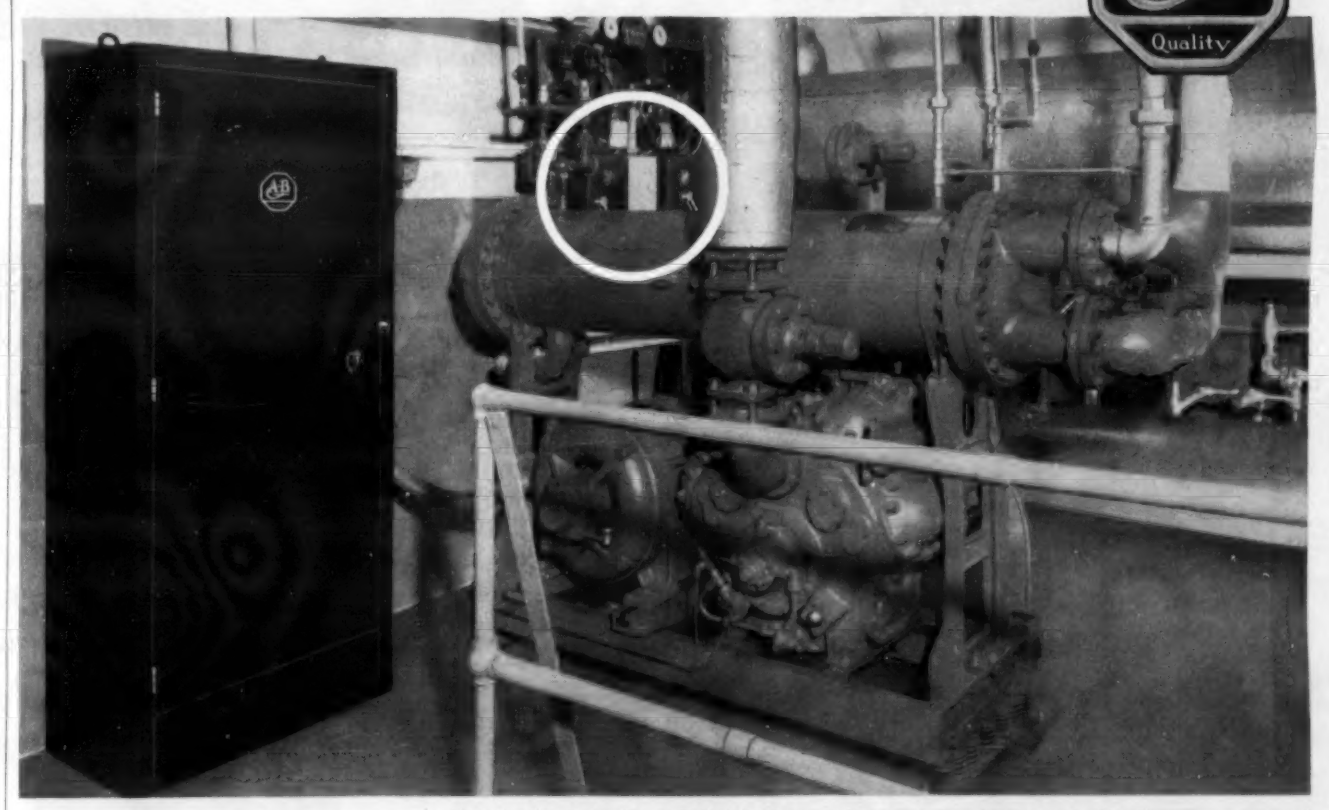
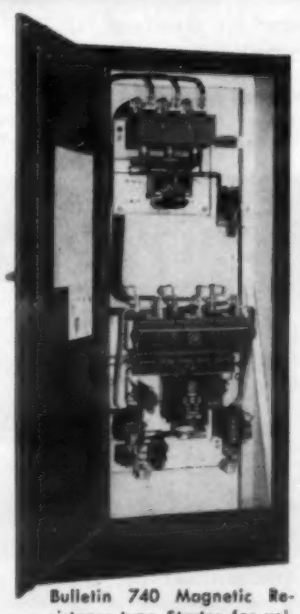


Allen-Bradley large-size, Bulletin 740 Magnetic Resistance-type Starter controlling the compressor used to cool water, and two A-B Bulletin 712 Combination Starters (circled) which operate the water circulating pumps of this York Cooling System installed at the Milprint Company, Milwaukee, Wisconsin.



Bulletin 740 Magnetic Resistance-type Starter for velvet smooth motor acceleration. Max ratings: 100 hp, 220 v; 200 hp, 440-550 v.

Allen-Bradley starters are the popular choice for refrigeration and air conditioning service, but . . . Why?

Because they are so dependable! Their simple design—only ONE moving part—makes them trouble free. There are no pins, pivots, or bearings to corrode or stick . . . no jumpers to break. You install Allen-Bradley controls . . . and forget them! A once or twice a year inspection is plenty—to inspect more often is a waste of time!

The cadmium silver alloy contacts used in all A-B starters never need cleaning, filing, or dressing. Therefore, there is no contact maintenance . . . a valuable timesaver in a busy plant.

Allen-Bradley thermal relays are accurate and always dependable . . . even after long service. When heater elements are carefully selected, the Allen-Bradley overload relays will fully protect your motors and connected equipment, as well as the operators.

The Allen-Bradley trademark stands for the best in motor control. In specifying "Allen-Bradley," you cannot make a mistake!

Allen-Bradley Co., 1313 S. First St., Milwaukee 4, Wis.

ALLEN-BRADLEY SOLENOID MOTOR CONTROLS
QUALITY MOTOR CONTROLS FOR HEATING, VENTILATING, AIR CONDITIONING & REFRIGERATION INDUSTRIES

GATHERED AROUND THE INGERSOLL Conditioned Air Div. of Borg-Warner Corp.'s new 2-ton air conditioning unit are (l. to r.) Dewey Martin, Ingersoll regional manager; S. J. Lucas of Viking Mfg. Corp.; Gray Huston, contract sales manager for Ingersoll; and H. S. Frasher, also of Viking.
———KEY NO. E-155———

Residential Air Conditioning

NEW HORIZONTAL COOLING UNIT through which air can pass vertically, horizontally, or at right angles is demonstrated by Betty Moss. The Janitrol hermetically sealed air conditioner is made in 2 and 3-ton sizes. KEY NO. E-156.

YEAR-ROUND AIR CONDITIONER with gas or oil-fired furnace providing heat is innovation at Builder's Show for Westinghouse Electric Corp. Gloria Gallagher admires the 2-ton air conditioner. KEY NO. E-157.

What Was New at the Builder's Show

For further information on products pictured here, please use key numbers and "Information Center" form on page 13. Other pictures from the Builder's Show were published in the Jan. 24 issue.

THREE NEW PRODUCTS were described at the United States Air Conditioning Corp. booth by William Moiselle. They are a 2-ton air-cooled condenser, a 2-ton cooling coil, and a 2-ton year-round air conditioning unit with 100,000 B.t.u. gas furnace.
———KEY NO. E-158———

THE NEW BRYANT AIR-COOLED CONDENSER package—Model 2-560-1—for use either with an evaporator coil package with or without blower—is described by Douglas Bogart, assistant advertising manager for the Bryant Heater Div., Affiliated Gas Equipment Co. (l.), to Jay Hickox and Mrs. Med Cashion, Oklahoma City builders. In addition to this 2-hp. unit, Bryant also makes 3 and 5-hp. units. KEY NO. E-159.

COMBINATION 2-ton water chiller and 110,000 B.t.u. input boiler and individual room unit are examined by Harry J. Mokate, Detroit distributor for Hydraline (l.), and George L. Brown, regional manager for Hydraline Products Div., Borg-Warner Corp.
———KEY NO. E-1510———

←
ARMSTRONG FURNACE CO.'s new 3-ton remote condensing unit for installation outside or in the attic and its cooling unit to be put in furnace duct or plenum are pointed out by Charles Daugherty, refrigeration laboratory technician for the company.
—KEY NO. E-1511—

HOW THE REMOTAIRE chilled or hot water heating and air conditioning unit operates is pointed out by Sally Avery in the American Radiator & Standard Sanitary Corp. booth. The unit is available in ratings from 200 to 600 c.f.m. KEY NO. E-1512.

→
"BLEND-AIR" PLENUM COOLING UNIT atop a Coleman furnace is pointed out to Nicholas De Carlo of Peterboro, Ont., Can. (l.) by Art P. Cannon of Bigelow & Dowse Co., Coleman's eastern Massachusetts distributor.
—KEY NO. E-1513—

ALL CONNECTIONS AT THE FRONT of the unit is a new feature of the Delco Heat Div., General Motors Corp. 2-ton air conditioner, T. L. Affleck, sales manager of the division (r.), points out to J. R. Williams, advertising and sales promotion manager for the Delco Appliance Div. KEY NO. E-1514.

REMOTELY CONTROLLING THE operation of dampers on the Majestic Co., Inc.'s companion air conditioning and heating units is Tom Kelley, Majestic salesman. When the cooling requirement is satisfied, the dampers automatically switch to the furnace fan, cutting off the cooling unit fan and allowing the moisture on the coils to drain off. When cooling is called for again, the moisture is not added to the home air, Kelley explained.
———KEY NO. E-1515———

NEW ARRANGEMENT for Conco Engineering Works' 2-ton water-cooled air conditioning unit is bottom mounting on a counterflow gas or oil furnace. The unit, intended for basementless homes, is flanked by Bill Momeny (l.) and John Howarth, Conco sales engineers.
———KEY NO. E-1516———

What's New

When requesting further information on new products, please use "Information Center" form.

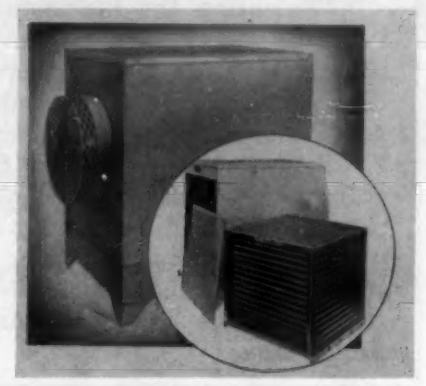
Compact Home Cooling Unit Fits Into Closet

——KEY NO. E-150——

ZANESVILLE, Ohio — "Hide-Away" cooling unit, announced Burnham Corp., is a central unit which tucks away out of sight in attic, basement, utility room, garage, or closet. It dehumidifies as it cools and requires six square feet of floor space. No water is needed for operation.

Cost-saving factor is the minimum ductwork required. In one story homes with a central hall, for instance, the Hide-Away unit is placed in the attic above the hall and the ceiling is dropped to form a distribution or plenum chamber with the cooled air going directly into the surrounding rooms through openings near the ceiling of each. Hide-Away is especially adaptable for either new or modernization jobs.

Hide-Away line is available in three models ranging from 2-room to 6-room capacity with compressor horsepowers of 1.0, 1.5, and 2.0.



Cooling Tower Uses All Aluminum, Stainless Steel

——KEY NO. E-151——

LOUISVILLE, Ky. — Frank Lewis, president of Silvercraft, Inc. here, has announced that the company is now in production on its newly-designed Silvercraft "Summer Shower" forced draft cooling tower.

Distinguished by all aluminum and stainless steel construction, the patented units embody design features which provide 2, 3, or 4-ton capacities by interchange of fan blades only, according to Lewis. This same feature applies to a larger unit providing 5 or 7½-ton capacities.

"Further economies are made possible by the fact that the entire all aluminum wet-deck cartridge slides out smoothly on stainless steel rails for cleaning or replacement," it was stated. "Replacement, however, doesn't appear to be a problem due to the baked-on No. 406 plastic coating which gives lasting protection to all surfaces exposed to recirculated water.

Total shipping weight of the entire unit is 112 lbs.

Soldering Tool Uses Indirect Heat Method

——KEY NO. E-152——

BEAVER, Pa.—A tool specially developed for soldering Bundyweld steel tubing for radiant heating has been developed by Beaver Tool Co.

Instead of heating the tubing and fitting with a direct flame, the heat is applied indirectly by heating the tool with a blow torch. Once the tool is heated it is possible to solder six to eight joints before reheating, thus eliminating a fire hazard close to joists and insulation.

It transfers heat evenly by conduction to any thin-wall tubing. Joints can be taken apart and inspected while the tool is in position. It is especially adaptable for hard to solder materials like stainless steel or aluminum tubing.

The tool sells for $4.95.

Bake, Broil at Same Time In Top G-E Range

——KEY NO. E-153——

LOUISVILLE, Ky.—Bake in one side, broil in the other at the same time with the 1955 Liberator double oven range, top model of the 6-model range line introduced recently by General Electric Co.

Deluxe 40-in. models include the double oven Liberator and single oven Stratoliner. These two models are equipped with the new "easy-visibility" light grey oven interiors and floodlights, according to the company.

The medium price 40-in. models, the single oven "Stewardess" and deluxe "Airliner," feature divided tops. Two 24-in. "Spacemaker" models, a standard and deluxe, provide 21-in. ovens for use in kitchens with limited space. Spacemakers are made in yellow and in green.

All models in the line include five basic features: Pushbutton controls, wide-opening "Master Oven," plus all Calrod heat units, Focused Heat Broiler, and the Calrod Oven Bake Unit.

Metal Framing Supports Pipe During Installation

——KEY NO. E-154——

DETROIT—A new framing material which simplifies installation of piping has been developed by Ainsworth Mfg. Co., Mult-A-Frame Div.

The framing which uses concrete inserts, pipe clamps, and roller pipe supports on channel bracing can support unusual weight and allows for pipe expansion.

Mult-A-Frame can be installed with only a saw and wrench, according to the company. It can also be dismantled and reused.

Information Center

For *more information* on What's New products, current literature and catalogs available, equipment advertised in AIR CONDITIONING & REFRIGERATION NEWS use Key Numbers where designated or specify products advertised and we'll see that you receive this information promptly.

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Mitchell expands line of Air Conditioners... Offers Air and Water Cooled Self-Contained units from 2 to 7½ tons

CHICAGO, ILL. — Today, 19 new Self-Contained package Air Conditioners were announced by B. A. Mitchell, president, Mitchell Mfg. Co.

Heralded as a milestone in modern air conditioning engineering, the new Mitchell line includes Store Coolers in 2, 3, 5, and 7½ ton capacities both air and water cooled. Residential Add-On units in 2, 3, and 5 ton capacities, air and water cooled. Year 'Round Residential Air Conditioners in 1½, 2, and 3 ton capacities air and water cooled with gas fired furnaces from 75,000 to 150,000 btu.

B. A. Mitchell pointed out that the new Mitchell Air Conditioning line was designed to meet the needs of the contractor, the service man and consumer, with such outstanding advantages as a *Performance Guaranteed* hermetic cooling system, new Slide-A-Way chassis and the amazing Electromagic Filter Eye.

"You expect more from Mitchell and you get all these amazing original air conditioning advantages. Mitchell discarded old fashioned air conditioning ideas and designs to give you more to sell."

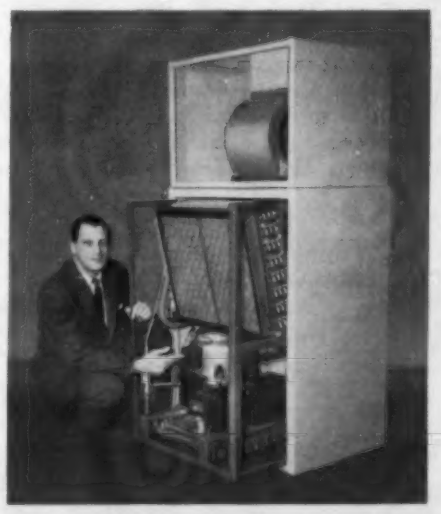
"From the very introduction of room air conditioning, we have played a leading part in developing significant advances in this industry. Mitchell self-contained package air conditioners are being built with the best economies of modern mass production, giving the American public maximum quality and value in air conditioning," said Mitchell.

New Slide-a-Way Hermetic Cooling System

R. H. Lodge, Mitchell Sales Manager, demonstrates Slide-A-Way Chassis in 3 H.P. Residential Air Conditioner.

"This Slide-A-Way Chassis means that it will cost less to install and service a Mitchell," said Lodge at the premier showing of this new Residential line. He pointed out that it was not necessary to remove electric controls, damper linkage, baffles or sheet metal parts to slide out the chassis for service or inspection.

Performance guaranteed to provide comfort cooling in the space to be air conditioned, Mitchell self-contained units are hermetic systems, high in capacity and very quiet. Incorporating the latest welded hermetic design, the Mitchell refrigerant system is sealed like a radio vacuum tube with nothing to adjust or oil. There is no need for seasonal pumpdowns, no belts to wear out or adjust, and Mitchell is always ready to operate. The heavy duty Mitchell compressor is super quiet and provides dependable service. There are no manhole openings or gaskets to cause leaks.



Mitchell has exclusive selling advantages

CHICAGO, ILLINOIS—An exclusive filter gauge, called the Electromagic Filter Eye, was announced today as standard equipment on all store units. This revolutionary air conditioning advance operates a positive signal light which tells the user when it is time to change filters.

As a deposit of dirt builds up in ordinary air conditioners, filters become clogged, capacity drops off, power and water costs increase—while cooling power decreases.

Recognizing this problem, Mitchell engineers developed the Electromagic Filter Eye that constantly measures an air conditioner's filtering efficiency and signals the user automatically when it is time to change filters for most efficient, most economical operation.

Mitchell merchandising program ready

A complete and detailed sales program is yours to build qualified prospects and close sales. Write today on your business letterhead for complete details on the Mitchell Packaged Air Conditioning Franchise.

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How To Balance Refrigeration System By Selecting Proper Flow Control Device—3

By John A. Schenk, Director of Engineering, Alco Valve Co.

"Balancing the Refrigeration System with the Aid of Proper Flow Control Devices" has been discussed before several sections of the American Society of Refrigerating Engineers by John A. Schenk, director of engineering for Alco Valve Co.

In the course of his talk Schenk describes the functions of various flow control devices, including thermostatic expansion valves, etc., and offers suggestions on application and service problems.

The talk is being published by the NEWS in several instalments, this being the third. The first appeared in the Jan. 17 issue.

It is believed that a brief explanation of flooded evaporators will be helpful before discussing refrigerant level control devices. Flooded evaporators have the following advantages over the dry expansion type:

1. Superior heat transfer is achieved because the greater percentage of the internal transfer medium (refrigerant) is a liquid, rather than a wet mixture with high percentage volume gas content.

2. All of the available surface is utilized for vaporization of the liquid refrigerant, since none of the heat transfer surface is required for superheating.

3. Adequate refrigerant is in the evaporator to meet any sudden increase in load.

Disadvantages of Flooded Evaporator

The disadvantages of the flooded evaporator are:

1. The high first cost of the evaporator.

2. The high initial cost of the refrigerant charge (because the flooded evaporator contains more refrigerant than the direct expansion type).

3. An oil return problem is encountered.

Some of the popular forms of flooded evaporators are:

1. The shell-and-tube cooler used on industrial brine cooling applications.

2. The Baudelot cooler used on applications where water must be chilled to 33° F. without danger of "freeze up" damage.

3. The boiler type evaporator used to cool various kinds of fluids.

When the high pressure liquid refrigerant is expanded to evaporator pressure, a certain percentage of it immediately flashes into a gas because of the reduction in pressure. The refrigerant that flashes cools the remainder of the refrigerant to the saturation temperature corresponding to the evaporator pressure.

Since this flash gas has no further refrigerating ability, there is generally no reason for allowing it to travel through the evaporator.

Fig. 15 illustrates a typical flooded evaporator and connecting piping. Liquid refrigerant is expanded into the surge drum and from there it flows into the evaporator through the drop leg pipe connected to the bottom of the surge drum.

The suction line to the compressor is also connected to the top of the surge drum in order to draw off the flash gas from the refrigerant entering the surge drum through the expansion valve and the gas from the boiling refrigerant in the evaporator, thus maintaining a flooded condition in the evaporator at all times.

Preventing Liquid Refrigerant 'Flood Back'

To prevent liquid refrigerant "flood back" during compressor starting and changes in load, the surge drum volume should not be less than 25% of the evaporator volume.

In an ammonia system, the bottom of the liquid header on the evaporator provides an ideal location for an oil drain and charging valve. The oil, being heavier than the ammonia, settles to the bottom of the evaporator and liquid header where it may be drained off when necessary.

When "Freon-12" or other refrigerants which readily mix with the compressor lubricating oil are used, the refrigerant level in the flooded evaporator is somewhat critical. The level must be high enough, with respect to the suction outlet, to assure oil return through the suction line and at the same time not too high to cause "flood back" with variations in load and at the beginning of each "on" cycle.

When using such refrigerants as "Freon-12," it may also be desirable to expand the high pressure liquid refrigerant into the bottom of the flooded evaporator to create additional turbulence and assist the return of oil from the evaporator to the suction line.

High Pressure Float Valve

The high pressure float valve is a level operated liquid refrigerant expansion valve that controls the flow of liquid refrigerant to the evaporator. See Fig. 16. It controls and is operated by the liquid refrigerant level on the high pressure side of the system.

From the condenser the liquid refrigerant flows into the high pressure float valve, which immediately opens and allows the liquid refrigerant to expand and pass into the evaporator.

Therefore, it can be seen that the high pressure float valve permits liquid refrigerant to flow into the evaporator at the same rate that the refrigerant gas is pumped from the evaporator by the compressor. When the high pressure float valve is equipped with an internal vent tube, the float valve may be installed above the system condenser without danger of the float chamber becoming gas bound.

When large capacity high pressure float valves are required, it is possible to provide a combination high pressure float valve pilot operating a diaphragm spring loaded expansion valve (modified thermostatic expansion valve) as shown in Fig. 17. The largest part of the refrigerant flow passes through the spring loaded expansion valve and the float valve acts merely as a pilot. This combination also provides positive shut-off of the liquid refrigerant flow when the compressor stops.

A refrigeration system using a high pressure float valve ordinarily consists of a single evaporator, compressor, and condenser, and in some cases a receiver for "pump down" purposes.

System with Ammonia

Although normally used on a single evaporator system, the high pressure float valve may be used with more than one evaporator if they are in series. Fig. 18 shows such a system with ammonia refrigerant used in a locker plant installation.

Control of the compressor and temperature of the individual rooms is provided by the use of additional control valves and three-wire thermostats. Any one thermostat can start the compressor and it will continue operating until all thermostats are satisfied.

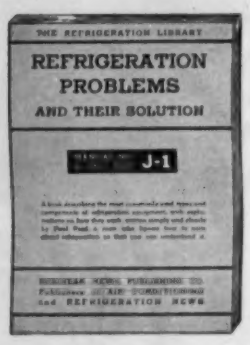
Cooling is provided in the chill room by the refrigerant flowing through the evaporator and evaporator pressure regulator "A." This regulator controls a minimum evaporator pressure and corresponding saturation temperature to keep the humidity in the room within the desirable limits.

When the chill room thermostat is satisfied, the solenoid pilot valve on regulator "A" is closed which in turn closes regulator "A." Assuming the other two thermostats are not satisfied, the compressor continues to operate.

The high pressure float valve continues feeding refrigerant and the pressure in the chill room evaporator builds up until it reaches the setting of the evaporator pressure regulator "B." At this time regulator "B" allows the refrigerant to pass through to the surge

(Continued on next page)

by PAUL REED



REFRIGERATION PROBLEMS

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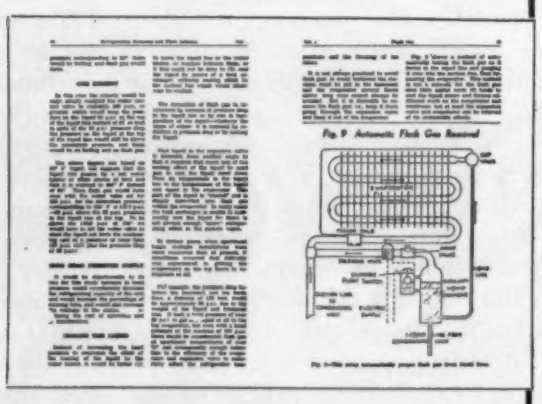

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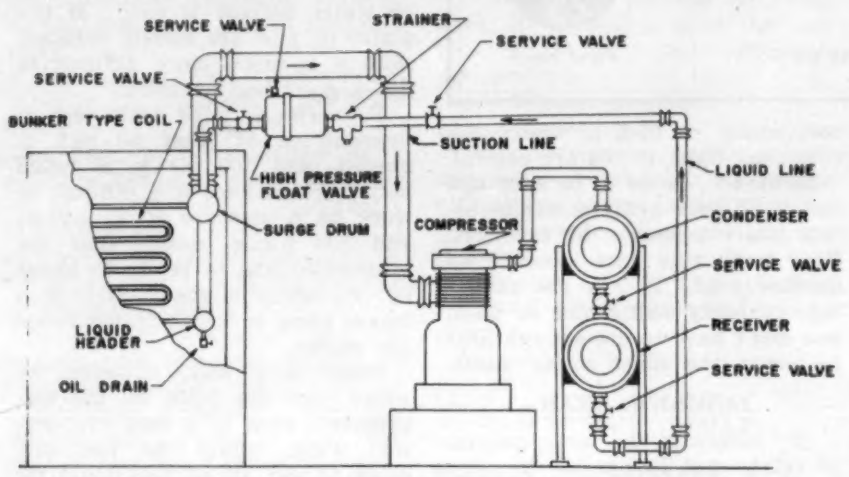

FIG. 15 illustrates a typical high pressure float valve application.

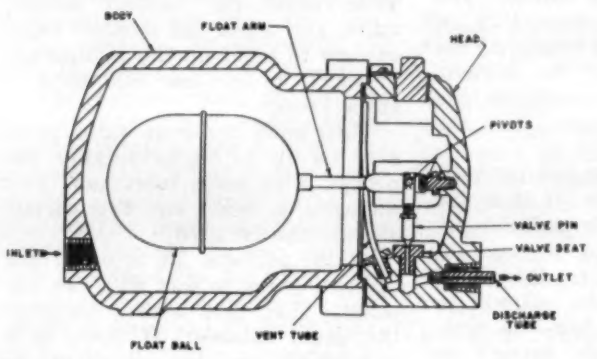

FIG. 16 is a high pressure float valve.

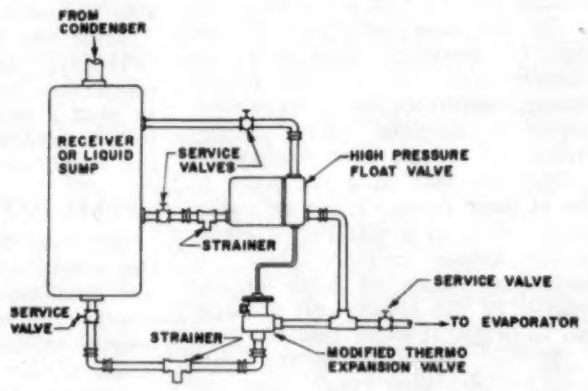

FIG. 17—Here a high pressure float valve pilot operates a modified thermostatic expansion valve.

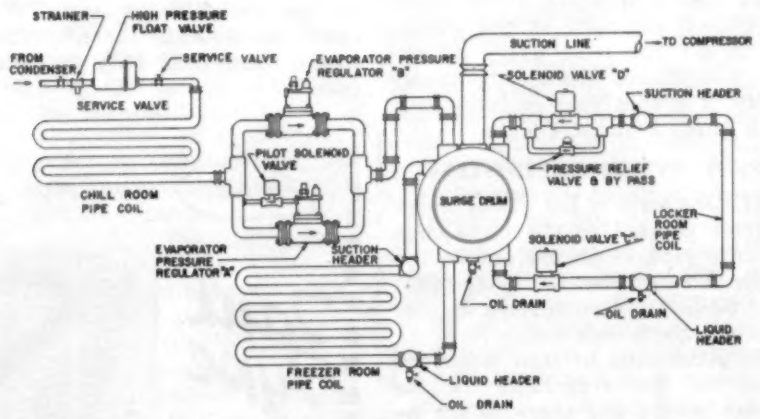

FIG. 18 diagrams locker plant hookup with high pressure float valve used on more than one evaporator.

Balancing a Refrigeration System--

(Continued from preceding page)

drum. The setting of regulator "B" is at such a point to provide automatic defrosting of the chill room evaporator. When the thermostat in the locker room is satisfied, the solenoid valves "C" and "D" close.

A pressure relief valve must be installed around the solenoid valve "D" to prevent high pressure build up on the "off" cycle if the locker room evaporator is trapped full of liquid refrigerant. The compressor will continue to operate until the thermostat in the freezer room is satisfied.

The low pressure float valve is also a level operated refrigerant expansion valve that controls the flow of liquid refrigerant to the evaporator. It controls and is operated by the liquid refrigerant level on the low pressure or suction side of the system.

This valve can be used in a multiple system and a different level in each flooded evaporator can be maintained if desired. Solenoid liquid valve, solenoid suction valves, and suction line regulators can be used on a system using low pressure float valves to provide automatic temperature control.

(To Be Continued)

Victor Sales & Supply Co. Moves; Francis Coffey Named Gen. Manager

PHILADELPHIA — Moving of Victor Sales & Supply Co., air conditioning and refrigeration wholesaler, to larger quarters on Wingohocking St. east of Whitaker Ave. and appointment of Francis J. Coffey as general manager has been announced by A. H. Holcombe, Jr., president.

The company had been located at 2222 Arch St. for 21 years.

Adjacent to a Pennsylvania Railroad siding, the new quarters are not only bigger but better arranged, Holcombe pointed out. Facilities include three large loading docks. Office, showroom, and warehouse are on one level.

The location is in the heart of the rapidly-expanding Greater Philadelphia industrial area. It is on a through-way connecting to the main traffic arteries east and west as well as north and south.

Sheperdson Replaces Saltus at Standard Supply In Worcester, Mass.

WORCESTER, Mass.—Resignation of Samuel G. Saltus as vice president and sales manager of Standard Supply, Inc., refrigeration supplies wholesaler here, and appointment of John P. Sheperdson to replace him has been announced by Robert Sheperdson, president.

John Sheperdson's position will be vice president in charge of engineering and sales.

A graduate engineer of Princeton university, he has been employed for the past four years by The Bush Mfg. Co., Hartford, Conn., having worked in Chicago as well as Hartford. Prior to joining Bush, he was associated with General Electric Co. as a plant management engineer.

Saltus has been with Standard Supply for 20 years.

Regal Plastic Appoints Hadden General Mgr.

KANSAS CITY, Mo. — Regal Plastic Co. has announced the appointment of L. I. Hadden to fill the newly-created position of general manager. For the past five years, he has been president and general manager of Standard Mfg. Corp., Chicago.

Honeywell Names Howard Snyder Milwaukee Manager

MINNEAPOLIS — Howard Snyder, for the past three years a heating controls salesman for the Minneapolis-Honeywell Regulator Co. in Milwaukee, has been promoted to manager of the firm's Milwaukee branch office.

Howard Snyder

He replaced R. H. Schulz who has resigned to accept another position.

A graduate in mechanical engineering from the University of Michigan, Snyder joined Honeywell in 1946 as an air conditioning and commercial building controls salesman in Detroit. Before being assigned to Milwaukee in 1952, he served a year as an account correspondent in the company's home office in Minneapolis.

Office Building Cooled

BUFFALO — Air conditioning will be included in a new office building to be erected by the Vanadium-Alloys Steel Co. in suburban Kenmore. The offices will have 4,500 sq. ft. of floor space. Construction contract for the new building has not yet been awarded.

Chas. A. Myers Will Manage Thermal Agency

HOUSTON—Chas. A. Myers has accepted the management of Thermal Agency, a manufacturers' agency firm here, it was announced recently.

Thermal Agency is national sales representative for "Thermal" atmospheric towers, "Aspir-Jet" nozzles, "Wa-Trol" regulators, and other heating and air conditioning items.

Myers is an electrical engineer and a graduate of Iowa State college. During the past 25 years he has been connected with the heating and air conditioning industry as consultant, application engineer, and design engineer.

During the past several years he has operated the Chas. A. Myers Co. as manufacturers' agent for cooling towers and refrigeration accessories.

Kansas Pioneer Dies

SABETHA, Kan. — Fred H. Baker, who grew up with the refrigeration industry in Kansas, died here on Dec. 8 at the age of 76.

He operated a refrigeration service shop at 11th and Main Sts. here.

A product of one of Frigidaire's first service schools, Baker worked all over Kansas and installed more than 20 locker plants.

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THE Cel LINE

Refrigeration Problems

and their solution

by Paul Reed

For Service and Installation Engineers

Paul Reed

A Hard Leak to Find

The following letter was recently received from one of our readers:

LETTER:

"We have a locker plant job with a belt-driven 7½-hp. water-cooled unit. This job was installed some time ago by another firm, and according to the owners, has leaked 'Freon-12' ever since it was first installed. It now leaks about 10 lbs. of 'Freon-12' every 18 days.

"The system has been checked over, time after time, by the firm that installed it, but without finding the leak. We have also checked this system over completely, but still haven't found any sign of a leak. Could it be in the condenser? Any help you can give us in this matter will be greatly appreciated."

ANSWER:

Apparently, you have one of those jobs that has a sizable leak in it, but which is in some location that makes it very difficult to find. Certainly, a leak in an ordinary location, that loses 10 lbs. of "Freon-12" in a little over two weeks, should not ordinarily be hard to find.

The first thing in testing this installation—or any installation for that matter, but particularly a "repeater" like this one, is to take nothing for granted. Never say "There can't be a leak in *that* place," for there can. Leaks can, and sometimes do, occur in the most obscure and completely unexpected places!

Of course, after a man has checked over a job several times, and spent a lot of time doing it, he is apt to lose patience, especially if he has several other service calls waiting. However, leaks just cannot be tolerated, even rather small ones, and certainly not one that is losing as much refrigerant as this one is.

But to be more specific: there are three locations on this job that seem, from your description of it, to offer the best possibilities.

LEAK INSIDE THE CONDENSER

(1) In the condenser. From the size of the leak, it is more probable that the leak is on the high-pressure side of the system. It would have to be a pretty big leak to lose that much refrigerant from the low-pressure side of a locker room, which probably never gets more than a few pounds above zero gauge. Could be, of course, but it is much more likely that the leak is on the high side somewhere.

From the size of this unit, it probably has a shell and tube condenser. Since you have undoubtedly gone over the outside of the condenser, the next step is to test for a leak inside the condenser.

You naturally wonder if this is possible, and still not get enough water into the system to freeze up the expansion valve. If the water valve is on the inlet to the condenser, as they usually are and should be, the water pressure is much lower than the head pressure. There should be very little water getting into the refrigerant, and the dryer is evidently taking care of it before it reaches the TX valve.

In the shell and tube type condenser, there are a number of parallel water tubes inside the shell. These water tubes are usually of ⅜ in. to ½ in. o.d. copper tubes, silver soldered at each end into tube sheets, which are in turn brazed to the ends of the shell.

Cast iron or heavy sheet metal caps are bolted to each end of the shell and the cooling water is connected to one shell and the drain to the other. The water passes through the tubes. This provides a great deal of heat transfer surface between the water in the tubes and the hot gas in the shell around the tubes.

LEAK AT INSIDE BRAZE, OR SPLIT TUBE

If there is a leak inside this type of condenser, it is apt to be at one of the joints where a tube is silver soldered into one of the tube sheets. In fact more than one of these joints may be leaking.

While these tube to tube sheet joints are perhaps the most likely locations of the leak, there could be a split tube. If the condenser is located in a place where, at some time, it may have got down to a freezing temperature, one or more of the tubes may have frozen and split. Another possible cause of a frozen tube is too rapid purging of the condenser (see "A Frozen Condenser in July" in Manual J-4).

At any rate, stop the machine, put on a head gauge, turn off the water, and remove the water and drain piping from the condenser caps; also remove the caps themselves. Then with compressed air, carbon dioxide, or nitrogen, blow the water out of each tube.

Presumably, there will be a head pressure of at least 80 or 90 p.s.i. in the condenser, which should be plenty for a leak test. With a halide torch, test each tube opening, and around the joint between each tube and the tube sheet. While you are at it, test both ends, even though you find one (or more) leaks on one end. Also while you are at it, test the tube sheets themselves for a crack, or around the joints between the tube sheets and the shells.

HOW TO REPAIR INSIDE LEAKS

If you find a leak, close the discharge service valve and the condenser valve, and purge the refrigerant pressure out of the condenser. If there is no condenser valve, the receiver will have to be drained. The point is, of course, that there must be no refrigerant pressure in the condenser when you start repairing the condenser.

(Also ventilate the room well. You are going to be using a torch, which may be somewhat dangerous in an atmosphere containing any of the chlorinated or fluorinated refrigerants—the "Freons," Genetrons, Arctons, methyl chloride, Carrene 7, etc.)

You can silver solder any leaks between tubes and tube sheets, but if you find that there is a leak inside one or more of the tubes, just put a small metal plug or cap over each end of the tube and silver solder it tight. You can even use soft solder or 95-5 to solder the tube plug tight, if you are careful.

However you do it, be sure and test it all over again carefully before you reassemble the caps, etc. Your torch may have loosened up another joint. That is one advantage of using soft solder or 95-5; you don't have to use enough heat to loosen the silver solder joints.

LOW-SIDE LEAK

(2) Although the large amount of refrigerant lost seems to point to this being a leak on the high-pressure side of the system, you cannot dismiss the possibility of there being a large leak in the low-pressure side of the system. If there is, it is probably on the evaporator connections in the locker room.

You did not mention what type of evaporator this is. If it is the blower coil type, it is undoubtedly provided with some method of heating up the coil to defrost it, so after a defrost, the coil will be free of ice, and the low-side pressure should be high enough to enable you to find the leak.

Do not take any part of the coil for granted. Most leaks on blower coils are at the return bends, manifold joints, expansion valve or solenoid valve connections, or on the heat exchanger.

But the leak does not have to be at these points; it can be a split tube, crack in a manifold itself or some similar unlikely place. If necessary, take off some of the panels of the blower coil housing, so as to get at every possible part.

If the evaporator is the plate coil or iron pipe type, there are more points at which there could be a leak, not only at the joints, which are the most likely places, but you cannot dismiss the possibility of a split pipe or tube, or a leak in the seam of a plate.

TEST AFTER DEFROSTING

If some form of hot gas or water defrost is used on the plate coils or iron pipe, it should not be too difficult to defrost the evaporator, and while it is free of frost, to give it a thorough leak test.

If plate coils or iron pipes are used as the evaporator in the locker room, and there is no defrosting method, then it makes the leak test that much more difficult. Scraping, brushing, or other manual means do not completely remove the frost and ice, and under these circumstances a leak test is very difficult. Of course, it is not possible to let the plates or iron pipe warm up enough to defrost themselves, without causing damage to the frozen food stored in the lockers.

BUILD UP PRESSURE WITH NITROGEN

The big trouble in trying to leak test any low side in a locker room is in getting enough pressure in the low side to make an effective leak test. With a blower coil with hot-gas, water, or electric defrost, you may be able to get up a fair pressure.

With plate coils or iron pipe it is much more difficult to get up much of a pressure, even if hot-gas or water defrost is used. If the plates or pipe are merely scraped, then it is much more difficult to get a good test pressure.

To make a good leak test, a pressure of at least 50 ps.i. is needed, and 100 p.s.i.g. is much better. Sometimes it is difficult to work up a pressure of 50 p.s.i.g., and 100 p.s.i.g. means that the evaporator has to be up to about 90° F., which is not feasible in a locker room in which frozen foods are stored.

There is a way, however, by which you can build up the test pressure, even in a cold evaporator. First, pump the low side down to get all of the liquid refrigerant out, leaving only gas. Then close the suction service valve, and crack the receiver valve enough to build up the refrigerant pressure in the low side until it stops rising.

Then build the evaporator pressure on up to 50, preferably 100 p.s.i.g., with some inert gas. Dry nitrogen is best, but *dry* carbon dioxide can be used.

Allow perhaps 15 minutes for the two gases to mix with one another. Then test with a torch in the usual manner. If there is a leak on the low side you should be able to find it with 100 p.s.i.g.

After the test, the mixture of "Freon-12" and nitrogen must be completely pumped out, down to as good a vacuum as you can get, before releasing the "Freon-12" to the evaporator again.

SPLIT REFRIGERANT LINE

(3) And finally, don't overlook the possibility of a split refrigerant line—liquid, suction, or discharge. It might even be in a length of tubing or pipe down under a floor.

And again, don't take any place for granted. Never say "There can't be a leak *there*." That's where these hard ones are finally found.

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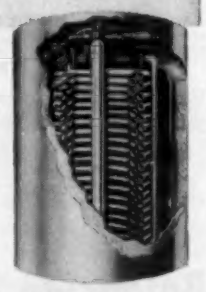

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Mitchell Packaged Line--

(Concluded from Page 1, Col. 2)

new "Slide-A-Way" chassis, and the "Electromagic Filter Eye" which automatically flashes a signal light when the filter needs to be changed, according to the company.

The company said it also has developed the Mitchell "Very High Capacity" air-cooled condenser. The VHC unit, consisting of a separate fan and large condenser coil in a self-contained, lightweight aluminum grill, may be mounted in a breezeway, attic, basement, on the roof, or on legs in the yard. It is factory charged.

In the air conditioner line, the basic commercial unit consists of a plenum chamber for proper air distribution, a blower section for efficient air delivery, and the Slide-A-Way hermetic cooling system, it was pointed out.

In residential units, the plenum is eliminated and the unit connected directly to ductwork. In some instances, existing blower or furnace facilities can be used in place of the regular blower section.

The residential add-on units are available with or without a blower section, allowing flexibility in application. In some instances, the existing furnace blower can be used. In others, the air conditioner blower section will be used.

Both furnace and air conditioner are combined in the same unit in the residential, year-round air conditioner.

Advantages pointed out in the introductory showing of the new units are:

"Slide-A-Way chassis, which slides out from the cabinet freely, reducing installation and service costs. The arrangement eliminates the necessity of removing electric controls, damper linkage, baffles, or sheet metal parts for service or inspection.

"Electromagic Filter Eye, an exclusive filter gauge which constantly measures filter efficiency and flashes a warning light when the filter should be changed. It is standard equipment on all store models and optional on the residential add-on units.

"Quiet operation, afforded by the blower which is canvas-ducted to the plenum and mounted on rubber isolators, providing a full floating assembly. The motor compressor is internally spring-mounted and the entire cabinet is double insulated.

"Weath'r Dial controls, which will accurately control any comfort condition. A thermostat placed to measure room temperature and maintain a comfortable climate in any season, a three-way motor control switch for ventilation, circulation, or cooling.

"Quad Cap-Tube refrigerant flow control, consisting of four cap tubes which meter the flow of the refrigerant.

"Turbo-Dryer coil construction, which consists of cooling coils made of a single piece of copper tubing from which solder return bends are eliminated.

"Arid-Dryer, for use on damp days. By flipping a lever the unit is converted into a giant dehumidifier, and will remove excess moisture without overcooling on damp, muggy days.

"Safety features, including high and low pressure cut-outs on the refrigerant system and a thermal overload switch which protects the compressor.

"The new line is inspected and approved by Underwriter's Laboratory."

Wilcox-Gay Gets Court Approval for Reorganization

GRAND RAPIDS, Mich. — Federal Judge W. Wallace Kent has approved petitions of Wilcox-Gay Corp., Charlotte, Mich., and its wholly-owned subsidiary, Garod Radio Corp., Brooklyn, for reorganization under Chapter X of the Bankruptcy Act.

Wilcox-Gay makes electronic products. Through subsidiaries, it also produces electrical appliances including refrigerators, freezers, and air conditioners, and distributes imported hi-fidelity radios and phonographs.

Majestic Major Appliance Corp., formerly of Lima, Ohio, and now of Charlotte, is one of its subsidiaries.

Wilcox-Gay's petition listed total liabilities of $5,990,606 and total assets of the same amount as of last Nov. 30. The petition said the firm's financial condition was largely due to losses suffered by Garod in its manufacture of TV receivers.

The company said that although it is solvent and could continue to pay its debts as they mature, it cannot continue to do so under pressures exerted by Garod's creditors. Consolidation of all operations at Charlotte was proposed, with the opinion being expressed that operations can be profitable.

Named trustee was Wadsworth Bissell here, who was ordered to file a list of classes of creditors by Feb. 15 and, within 60 days, report on formulation of a reorganization plan and other pertinent matters.

Hearing on objections, if any, to retention of Bissell as trustee was set for March 21. On the same day, a creditors' meeting will be held here before Chester C. Woolridge, referee.

Worthington Begins New Dealer Publication

HARRISON, N. J. — Worthington Corp.'s Air Conditioning & Refrigeration Div. is inaugurating a publication entitled "Merchandiser," which will be distributed monthly to the corporation's dealers.

The new publication offers information on various sales promotional activities of Worthington's air conditioning and refrigeration dealers and points out the various selling tools made available by the corporation.

Designed as a newsletter, the new medium will keep Worthington dealers up to date with current information on merchandising and advertising air conditioning and refrigeration equipment.

'Death Trap' Law Asked

ALBANY, N. Y. — A bill has been introduced in the state legislature which would prohibit the sale of iceboxes or refrigerators that cannot be opened from the inside.

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Government Contracts

DEPARTMENT OF DEFENSE

Description	Quantity	Invitation No.	Opening Date
Directorate of Procurement and Production, Building 43, San Antonio Air Materiel Area, Kelly Air Force Base, Texas			
Rehabilitation of Base Heating System, Industrial Area, Kelly AFB, Texas.	Job	(41-608-55-50B)	31 Jan 55
Directorate of Procurement and Production, Ogden Air Materiel Area, Hill Air Force Base, Utah			
Addition of Heating and Ventilating, Plating and Sandblasting Shop, Bldg. 225.	Job	(42-600-55-40)	14 Feb 55
San Francisco Dist., Corps of Engineers, U. S. Army, 180 New Montgomery St., San Francisco, California			
Furnace, warm air, forced, liquid fuel oil, 28,000 B.t.u./hr.	560 ea.	Eng-04-203 55-320-B	27 Jan 55
Purchasing and Contracting Office, Fort Wadsworth, Staten Island, New York			
Air Conditioning Post Theater.	Job	(AI-30-122-55-11)	18 Feb 55
Purchasing and Contracting Office, Perrin Air Force Base, Texas			
Services for cleaning summer and/or winter air conditioning systems once annually in the buildings listed under Items 6 thru 22:			
Administration Bldgs., type A-6, Nos. 1-3, 1-4, 46-5, 47-5 and 50-9.	1 Job	41-610-55-12-B	14 Feb 55
Administration Bldgs., type A-8, Nos. 17-2, 18-2, 19-2, 26-2, 29-2, 35-2, 37-2, 2-4, 3-2, 3-4, 4-4, 23-8.	1 Job	"	"
Administration building No. 40-8.	1 Job	"	"
Telephone and telegraph building No. 7-1.	1 Job	"	"
Fire station, bldg. No. 7-2.	1 Job	"	"
Day rooms, bldgs. Nos. 13-1, 14-1, 17-3, 18-3, 19-3, 26-3, 28-3, 29-3, 35-3, 37-3, 46-4, 47-4, and 50-8.	1 Job	"	"
Cadet barracks, bldg. Nos. 13-2, 13-3, 13-4, 13-6, 13-7, 13-8, 14-2, 14-3, 14-4, 14-6, 14-7, 14-8, 23-1, and 23-2.	1 Job	"	"
Special service rec. bldg., 6-1 and 8-1.	1 Job	"	"
Warehouse bldg., No. 40-1 and 40-3.	1 Job	"	"
Barracks, 74M, Bldg., 46-1, 46-2, 46-3, 47-1, 47-2, 47-3.	1 Job	"	"
Shop bldg., Nos. 49-3, 49-4.	1 Job	"	"
Barracks, 63M, bldg. Nos. 17-4, 5,6,7, 18-4, 5,6,7, 19-4, 5,6, 20-1, 2, 26-4, 5,6,7, 28-4, 5,6, 29-4, 5,6,7, 35-4, 5,6,7, 37-4, 5,6, 50-2, 3,5,10,11, 53-3, 4.	1 Job	"	"
B.O.Q. Nos. 51-1, 51-2, 51-5, 51-6.	1 Job	"	"
Officers Club, Bldg. 51-4.	1 Job	"	"
Out Patient clinic, bldg. 52-18.	1 Job	"	"
Motor pool office, bldg. No. 56-2.	1 Job	"	"
Motor repair shop, No. 56-3.	1 Job	"	"
Commanding General, Philadelphia Quartermaster Depot, 2800 S. 20th St., Philadelphia 45, Pennsylvania			
Installation of Mechanical Exhaust System.	Job	55-502B	11 Feb 55

GENERAL SERVICES ADMINISTRATION

Description	Quantity	Reference No.	App. Bid Date
General Services Administration, Business Service Center, Region IV, 50 Seventh St., N.E., Atlanta, Georgia			
New Air Conditioning, U. S. Post Office & Court House (Old), Atlanta, Ga.	Job	CR4-935	10 Feb 55
General Services Administration, Business Service Center, 575 U. S. Courthouse, 219 S. Clark St., Chicago 4, Illinois			
Refrigerators, Fed. Spec. AA-R-211c.	2 ea.	DCH-81348	1 Feb 55
General Services Administration, Business Service Center, 1114 Commerce, Dallas, Texas			
Altus, Oklahoma, P.O. Air Conditioning.	Job	PRCR7-2	15 Feb 55

CONTRACTS AWARDED THROUGH JAN. 25

Umatilla Ordnance Depot, Ordnance, Oregon

Replacement of heat equipment in Bldg. No. 131. (AVI-35-073-55-11).—Job, $26,294.—Campbell-Norquist & Co., 77 N.E. Holladay St., Portland 14, Oregon.

General Services Administration, 575 U. S. Courthouse, Business Service Center, Chicago, Illinois

Water Coolers.—108 ea., $12,292.—Sunroc Refrigeration Corp., Glen Riddle, Pennsylvania.

Vance Air Force Base, Oklahoma

Modifications to Air Conditioning System in Surgery Suite and Adm Areas of Bldg. T-800 34-600-55-16.—Job, $16,436.—Billings Electric Co., 340 N. Independence, Enid, Oklahoma.

Air Force Contracting Office, Laredo Air Force Base, Laredo, Texas

Providing air conditioning and heating system for Academic Classrooms, Bldgs. T-122, T-126, T-141, T-161, T-165, and T-181, Laredo Air Force Base, Texas. (IFB 41-641-55-11).—Job, $53,418.—W. R. Cook Air Conditioning, 642 Omaha Dr., Corpus Christi, Texas.

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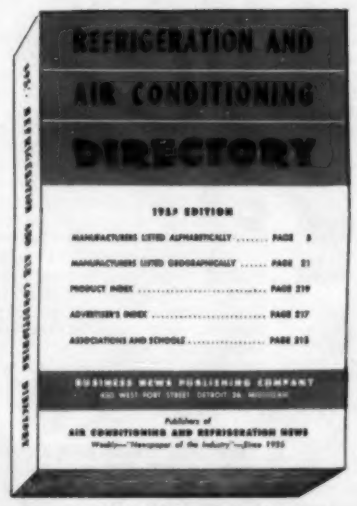

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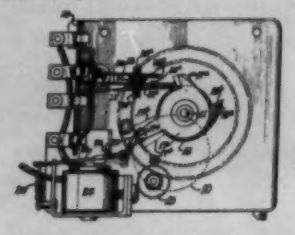
PATENTS

Week of September 28 (Concluded)

2,690,526. CONTROL MEANS FOR DEFROSTING REFRIGERATORS. David Morrison, Manitowoc, Wis., assignor to Paragon Electric Co., Two Rivers, Wis., a corporation of Wisconsin. Application Oct. 3, 1950, Serial No. 189,121. 5 Claims. (Cl. 317—141.)



2. Control means for a circuit that contains a switch which opens at a predetermined low temperature and a second circuit that opens at a predetermined high temperature, comprising two cooperating spring blades extending in the same direction and normally engaged with each other, the blades being anchored at corresponding ends with the free end of one blade projecting slightly beyond the free end of the other, said blades being connected in the first of said circuits and closing the same when the blades engage each other, a contact piece in the path of the longer blade when both blades are flexed toward it, a continuously rotating member on which the free ends of the blades normally rest, a cam lug on said member to flex both blades until the longer blade touches the stationary contact, said lug being shaped to release the shorter blade abruptly while the longer blade still rests on the lug, an element beside the cam and rockable from an idle position to a working position in which it underlies the free end of the longer blade, means yieldingly holding said element in its idle position and an electromagnet to rock said element into its working position; said electromagnet having an energizing coil arranged in series with said contact piece and said longer blade in the second circuit whenever that blade engages said contact piece, whereby the electromagnet is deenergized and said rocking element returns to its idle position and releases the longer blade when said predetermined high temperature is reached.

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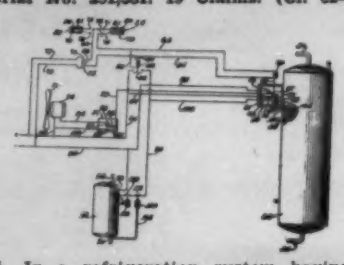
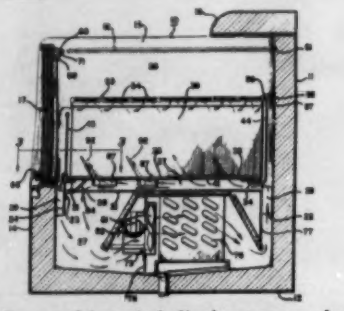
Week of October 5

2,690,649. CONTROL FOR HEAT PUMP AND WATER HEATER. William P. Borgerd, Evansville, Ind., assignor to International Harvester Co., a corporation of New Jersey. Application Oct. 15, 1951, Serial No. 251,381. 19 Claims. (Cl. 62—4.)



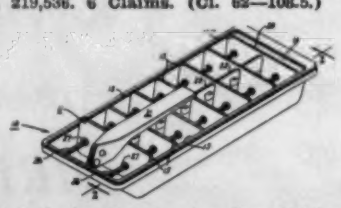
1. In a refrigeration system having a motor-compressor and a heat exchange unit, electric means for circulating air to be conditioned over said heat exchange unit, a coil positioned in heat exchange relation with a liquid, said coil being connected to said motor-compressor so that a portion of the compressed refrigerant flows therethrough, first means for operating said motor-compressor and said electric means in response to the temperature of said air, and second means for operating said motor-compressor independent of said electrical means in response to the temperature of the liquid.

2,690,650. OPEN TOP DISPLAY REFRIGERATING APPARATUS. Joseph R. Pichler, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich., a corporation of Delaware. Application Sept. 23, 1952, Serial No. 31,959. 15 Claims. (Cl. 62—89.5.)



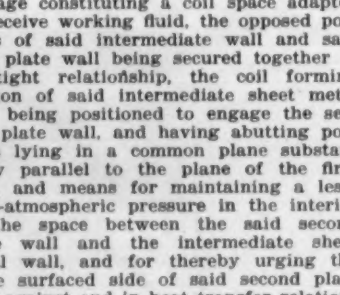
1. In a refrigerated display case, a food supporting device therein, means spaced from the bottom of said device and forming a passageway therebetween, said device including spaced apart hollow vertical flues extending thereacross and dividing the same into a plurality of food storage compartments, said flues having their bottom end communicating with said passageway, means for cooling air within said case, means for circulating at least some of the cooled air into said passageway in a direction paralleling said flues, and means cooperating with the open bottom end of said flues and extending laterally therefrom within said passageway for scooping a portion of the air circulated thereinto upwardly through said flues.

2,690,651. ICE TRAY AND GRID STRUCTURE. Richard C. Grinnell, Philadelphia, Pa., assignor to Philco Corp., Philadelphia, Pa., a corporation of Pennsylvania. Application April 6, 1951, Serial No. 219,536. 6 Claims. (Cl. 62—108.5.)



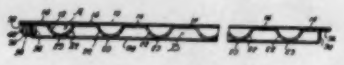
1. A device for freezing liquid into ice cubes and for breaking ice cubes into fragments, consisting of a tray adapted to contain liquid to be frozen and a grid structure within the tray to divide its interior into ice cube compartments, said grid structure comprising: a plurality of plates spaced to provide ice cube confining surfaces and supported within the tray for pivotal movement in a direction to displace the ice cubes confined between said surfaces, each of said plates having an aperture in that portion which is adapted to be normally immersed in the liquid contained within the tray, rod-like means passing contained within the tray, rod-like means passing through the apertures in said plates and suspended by said plate portions in an elevated position in which said means lies below the normal level of the liquid within the tray and at a substantial distance from the bottom of the latter so as to become firmly imbedded in the ice cubes, and mechanism connected with said plates and operable to impart the aforesaid pivotal movement to said plates, said means holding the ice cubes against displacement by the mentioned pivotal movement of said plates to cause the fragmentation of ice cubes.

2,690,652. NOISE ELIMINATOR FOR REFRIGERATING APPARATUS. Wilford H. Teeter and John J. Preotle, Dayton, Ohio, assignors to General Motors Corp., Detroit, Mich., a corporation of Delaware. Application Jan. 12, 1953, Serial No. 330,786. 3 Claims. (Cl. 62—115.)



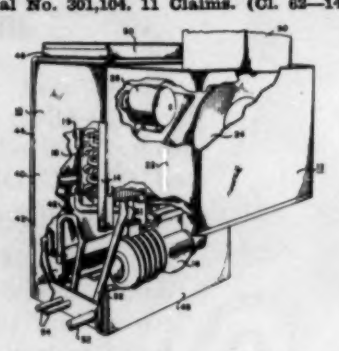
1. In a refrigerating system, a compressor, a condenser, an evaporator, and refrigerant flow connections for connecting said compressor, condenser and evaporator in series refrigerant flow relationship, said refrigerant flow connections including a shut-off valve at the outlet of said compressor and an adaptor block removably secured to the outlet of said compressor between said compressor and said shut-off valve, a surge chamber carried by said adaptor block and means for directing the refrigerant discharged by said compressor through said surge chamber, and common means for securing said shut-off valve and adaptor block in assembled relationship to said compressor.

2,690,653. STAMPED PLATE. Herman W. Kleist, Chicago, Ill., assignor to Dole Refrigerating Co., Chicago, Ill., a corporation of Illinois. Application Aug. 14, 1952, Serial No. 304,390. 4 Claims. (Cl. 62—126.)



1. In a vacuum type plate, first and second plate walls having generally parallel, plane surfaced sides and connected edge portions, said edge portions being secured together in a gas-tight relationship with said plane surfaced sides being spaced apart, an intermediate sheet metal wall in the space between said plate walls and forming with said first wall a tortuous passage constituting a coil space adapted to receive working fluid, the opposed portions of said intermediate wall and said first plate wall being secured together in gas-tight relationship, the coil forming portion of said intermediate sheet metal wall being positioned to engage the second plate wall, and having abutting portions lying in a common plane substantially parallel to the plane of the first wall, and means for maintaining a less-than-atmospheric pressure in the interior of the space between the said second plate wall and the intermediate sheet metal wall, and for thereby urging the plane surfaced side of said second plate wall against and in heat transfer relationship with the coil forming portions of the intermediate sheet metal wall, and against said abutting portions of the intermediate wall, whereby, in response to external atmospheric pressure, the first and second walls are normally maintained in substantially parallel planes.

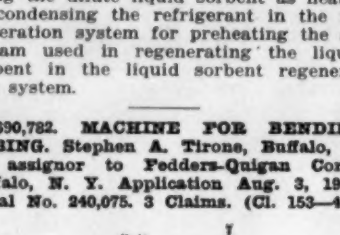
2,690,654. SELF-CONTAINED AIR CONDITIONING UNIT. Charles D. Graham, Oakwood, Ohio, assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application July 26, 1952, Serial No. 301,104. 11 Claims. (Cl. 62—140.)



1. An air conditioner comprising in combination two separate units for assembly with one another, the first of said units comprising a supporting frame, a volatile refrigerant system including an evaporator supported on said frame, and cabinet means including a plurality of panel means enclosing said frame, said panel means including removable and interchangeable sections, one of said sections having an air inlet connection formed therein, the second of said units comprising a blower and a blower housing, and means for removably securing said housing to one side of said supporting frame above the midpoint thereof, said blower housing having an air inlet opening on one side and an air outlet arranged to direct the conditioned air upwardly, said air inlet opening communicating with said first unit, said evaporator being disposed adjacent said air inlet opening whereby said blower unit pulls air to be conditioned through said evaporator.

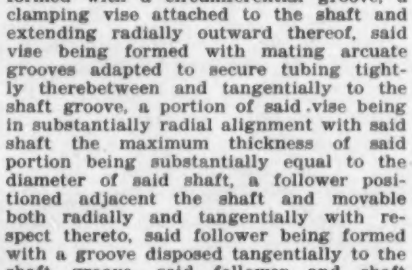
2,690,655. PROCESS FOR LIQUEFACTION AND SEPARATION OF GASES. Alfred Etienne, Paris, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France. Application July 19, 1949, Serial No. 105,606. Claims priority, application France July 24, 1948. 3 Claims. (Cl. 62—175.5.)

1. In a process of separating a gaseous mixture wherein said gaseous mixture and a product of its separation are passed alternately along a same path through a reversing heat exchange zone in which an impurity of the mixture deposits by cooling, utilizing expansion of said gaseous mixture at low temperature, the whole of so expanded gas being submitted to the separation, the step of expanding with



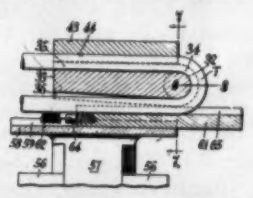
external work a part of the gaseous mixture containing the said impurity, the final temperature of this expansion being above the deposit temperature of this impurity, and the expanded gas being led to the portion of the heat exchange zone the temperature of which is substantially the temperature of said expanded gas.

2,690,656. METHOD OF AIR CONDITIONING. William Warren Cummings, Bradford, Vt. Application March 24, 1949, Serial No. 83,111. 3 Claims. (Cl. 62—176.)



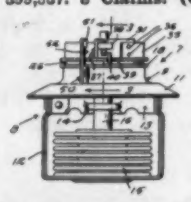
1. The process of air conditioning which combines cooling and dehumidifying the air in a controlled area which consists in combining a refrigeration system for cooling the air wherein a refrigerant in gas form is compressed to high pressure, and then condensed to liquid form, with a liquid sorbent regeneration system for dehumidifying the air, and using the dilute liquid sorbent from the dehumidifier of the controlled air stream in the liquid sorbent regeneration system as the cooling medium for condensing the refrigerant in the refrigeration system, and using the dilute liquid sorbent as heated in condensing the refrigerant in the refrigeration system for preheating the air stream used in regenerating the liquid sorbent in the liquid sorbent regeneration system.

2,690,782. MACHINE FOR BENDING TUBING. Stephen A. Tirone, Buffalo, N. Y., assignor to Fedders-Quigan Corp., Buffalo, N. Y. Application Aug. 3, 1951, Serial No. 240,075. 3 Claims. (Cl. 153—40.)



1. In a machine for bending tubing of circular cross section, a rotatable shaft formed with a circumferential groove, a clamping vise attached to the shaft and extending radially outward thereof, said vise being formed with mating arcuate grooves adapted to secure tubing tightly therebetween and tangentially to the shaft groove, a portion of said vise being in substantially radial alignment with said shaft the maximum thickness of said portion being substantially equal to the diameter of said shaft, a follower positioned adjacent the shaft and movable both radially and tangentially with respect thereto, said follower being formed with a groove disposed tangentially to the shaft groove, said follower and shaft grooves, in conjoint cross section, having an out-of-round curvilinear periphery, the major axis of said conjoint follower and shaft grooves being normal to the shaft and the minor axis thereof being parallel to the shaft, the dimension of said grooves on said major axis being sufficiently greater than the normal outside diameter of said tubing and the dimension of said minor axis being sufficiently less than the normal outside diameter of said tubing to permanently flatten the bent portion of said tubing during the bending operation, and means for forcing the follower toward the shaft to clamp circular section tubing between the shaft and follower grooves and progressively bend and deform such tubing into said permanently flattened cross section as said shaft is rotated to bend the tubing.

2,690,874. DUAL ACTION SAFETY THERMOSTAT FOR LIQUID COOLING SYSTEMS. James L. Stubblefield, Denison, Texas. Application Dec. 21, 1953, Serial No. 399,537. 8 Claims. (Cl. 236—34.)

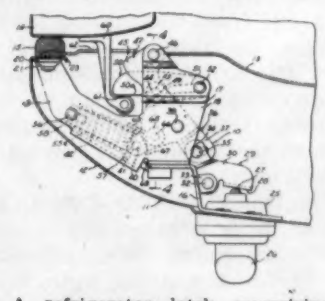


1. A dual action safety thermostat valve comprising a frame including an annular head portion forming a passage therethrough for a coolant and having an outer end defining the outlet end of said passage, a primary valve, a valve stem extending through said primary valve and having an intermediate portion fixed thereto for normally supporting said valve in a closed position against said outlet end, a secondary valve slidably mounted on the stem outwardly of the primary valve, a latching lever pivotally mounted on said stem outwardly with respect to said secondary valve, detent means mounted on said secondary valve for engaging a free end of the latching lever in one position of the latching lever to retain said secondary valve in a closed position in engagement with the primary valve, said primary valve having openings therein providing communication between portions of adjacent sides of the valves, a first temperature responsive element connected to said stem for displacing the valves as a unit away from the outlet end of the annular head portion to an open position when said first temperature responsive element is actuated in response to a temperature increase, and said detent forming a part of a second temperature responsive element adapted to be actuated by a higher temperature than the first temperature responsive element for moving the detent to a position to disengage said latch lever to release said secondary valve for movement away from the primary valve to an open position.

2,690,875. THERMOSTATICALLY OPERATED VALVE. Wayne E. Jenkins, Santa Monica, Calif., assignor to Minneapolis-Honeywell Regulator Co., a corporation of Delaware. Application June 20, 1951, Serial No. 232,637. 14 Claims. (Cl. 236—48.)

1. In a thermostatically controlled valve, a valve mechanism having a first closed position and a second partially open position providing a predetermined minimal flow and a third fully opened position providing a maximum flow, a thermostat movable in accordance with temperature changes, motion transmitting means having relatively movable sections connecting said thermostat and valve mechanism to provide direct graduating movement of said valve mechanism between said second and third positions in response to a first range of movement of said thermostat, said sections having relatively spaced apart and contracted positions, an over-center snap acting device mounted between said sections and being formed to yieldably maintain said sections in said spaced apart postion during said first range of movement and actuated by relative movement of said sections to contracted position to provide an abrupt movement of said valve mechanism between said first and second positions, and means effecting said relative movement of said sections to contracted position in response to a second range of movement of said thermostat contiguous to said first range of movement.

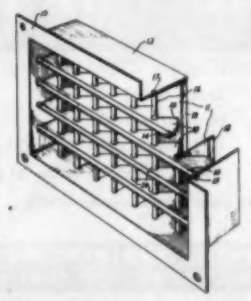
2,690,923. REFRIGERATOR LATCH. George E. Curtiss, Jr., and Louis G. Bobrowski, New Britain, Conn., assignors to The Stanley Works, New Britain, Conn., a corporation of Connecticut. Application Dec. 6, 1950, Serial No. 199,475. 6 Claims. (Cl. 292—332.)



1. A refrigerator latch comprising a frame, a bolt having adjacent one end a forwardly engaging latching surface adapted to cooperate with the keeper, means between the frame and the other end of said bolt for supporting the bolt for rocking and longitudinal movements, a link pivoted to the frame at a pivot disposed at one side of the bolt and pivotally engaged with the bolt between the ends of said bolt and disposed at approximately a right angle to said latch engaging surface when the bolt is in latching position, a lever pivotally secured to said frame on a pivot disposed at the opposite side of the bolt and having an arm pivotally connected to the bolt intermediate the ends of the bolt, said lever having a second arm disposed at an angle to the first arm comprising a first toggle link, a second toggle link pivoted at one end to said first toggle link, means on said frame for pivotally and slidably supporting the other end of said second toggle link, said first and second toggle links forming a toggle, and a spring urging said toggle beyond one off-center position to maintain the bolt in latching position and for holding the toggle in another off-center position.

REISSUES

23,884. ADJUSTABLE GRILLE. Walter W. Kennedy, Rockford, Ill., assignor to Barber-Colman Co., Rockford, Ill., a corporation of Illinois. Original No. 2,630,053, dated March 3, 1953, Serial No. 185,954, Sept. 21, 1950. Application for reissue Jan. 8, 1954, Serial No. 403,086. 5 Claims. (Cl. 98—40.)



1. A grille comprising a generally rectangular frame, a plurality of laterally spaced vanes of thin sheet metal extending across said frame and each having a rounded curl formed at and reinforcing one edge, V-shaped notches cut from and spaced along the opposite edge of each vane and terminating at the apex in a generally circular hole disposed adjacent said curl, pivot pins supported in said frame and projecting into opposite ends of said curls, a second set of laterally spaced vanes each disposed in one of said notches in said first vanes and having a curl formed along one edge and extending through the alined holes of said first vanes, and pivot pins supported in the sides of said frame and projecting into the curls of said second vanes.

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PATENTS

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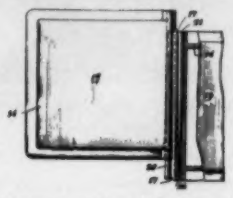
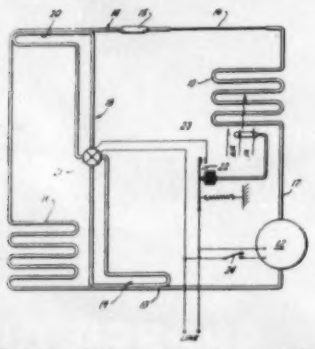
2,691,187. HINGE CONSTRUCTION FOR LID MEMBERS FOR REFRIGERATOR CHESTS. Albert J. Lorenz, Clifton, N. J., assignor to American Hard Rubber Co., New York, N. Y., a corporation of New York. Application Jan. 11, 1952, Serial No. 265,947. 2 Claims. (Cl. 16—149.)



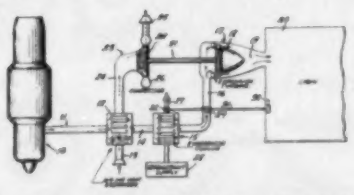
1. A hinge construction for joining a pair of similar lid members, which are adapted jointly to cover an upwardly facing opening into the interior of a refrigerator chest, comprising an imperforate, flexible strip of resilient material having thickened bead portions arranged in substantially parallel relation to one another along the lateral edges of said strip, each of said bead portions tapering progressively from one end to the other, said bead portions being respectively tapered in opposite directions, so that there is located at one end of said strip, the larger end of one of said bead portions and the smaller end of the other, whereby to facilitate disassembly of the parts by forces simultaneously applied as a force couple, in one direction to one of said lids and in the opposite direction to the other of said lids, both applications of force being substantially parallel to the general longitudinal dimension of the hinge construction, and each of said lid members including a means providing a cavity shaped substantially to conform to the shape of one of said bead portions and providing a slot through which extends a part of said strip, which is secured to a bead portion in said cavity in the assembled relation of both lids and the hinge construction aforesaid, so that when all the parts aforesaid are in their assembled relation each of said bead portions will substantially completely fill said cavity of each of said lids respectively, while disassembly and reassembly of the parts is facilitated by the tapered configuration of said bead portions.

2,691,273. FEED CONTROL MEANS FOR REFRIGERATION APPARATUS. William P. Kramer, Philadelphia, Pa., assignor to Philco Corp., Philadelphia, Pa., a corporation of Pennsylvania. Application Nov. 26, 1951, Serial No. 258,188. 10 Claims. (Cl. 62—3.)



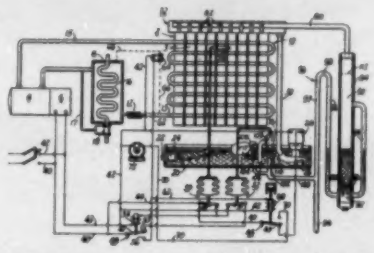
1. Refrigeration apparatus comprising a series flow circuit having a high pressure side and a low pressure side, and including: compressor, condenser, restrictor and evaporator elements; a first portion of the high pressure side of said circuit, which portion includes said restrictor, having, in normal operation, warm liquid refrigerant flowing therethrough toward said evaporator, and a second portion of the high pressure side of said circuit having flowing therethrough refrigerant at a temperature substantially elevated as respects the temperature of said warm refrigerant; and heat exchange means for controlling the flow of liquid refrigerant from said condenser to said evaporator by effecting partial volatilization of said warm liquid refrigerant, said last means comprising: a closed secondary refrigeration circuit having an evaporator section disposed in heat exchange relation with said second portion and a condenser section disposed in heat exchange relation with said restrictor, and means for controlling the flow of refrigerant through said secondary circuit.

2,691,274. AIR CONDITIONING SYSTEM FOR AIRCRAFT CABINS. Vernon L. Whitney, Jr., Hicksville, N. Y., assignor to Fairchild Engine and Airplane Corp., Farmingdale, N. Y., a corporation of Maryland. Application April 11, 1951, Serial No. 220,477. 7 Claims. (Cl. 62—6.)



7. In an air conditioning system for aircraft and the like having at least one compartment to be cooled, the combination of a source of cabin supply air under pressure, a separate source of cooling air, a cooler for the cabin air utilizing vaporizable coolant, a heat exchanger interposed between said source of cabin supply air and said cooler and supplied with air from said separate source for precooling the cabin supply air prior to its admission into said cooler, an expansion chamber receiving the cooled cabin air from said cooler and discharging the expanded air to said compartment for cooling the same, a valve interposed in the path of flow of said cabin supply air between said source of cabin supply air and said compartment for controlling the supply of air to the latter, a thermostat responsive to temperature of the compartment, and operative connections between said thermostat and said valve.

2,691,275. ICE MAKING. John M. Andrews, York, Pa., assignor to Flakice Corp., Brooklyn, N. Y., of Delaware.

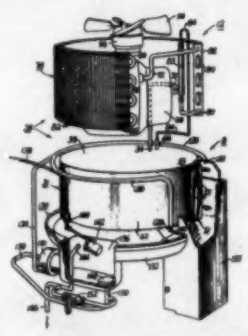


1. In an ice-making apparatus, the combination of, a bank of freezing tubes, water feed means to flow water through said tubes, refrigerating means to refrigerate said tubes whereby ice is formed on the walls thereof, water discharge means connected to receive water overflowing from the entrance of one of said tubes whereby water will flow therethrough when there is a restriction in that tube, accumulator means to accumulate the water which flows through said water discharge means, and means which is effective to flow water from said accumulator means when a substantially predetermined amount of water has flowed into said accumulator means.

2,691,276. REFRIGERANT CIRCUIT FOR AIR CONDITIONERS. Allen Trask, Chicago, Ill., assignor to Welbilt Stove Co., Inc., Maspeth, N. Y.

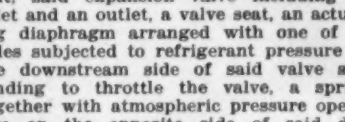
4. An air conditioner refrigerant circuit including in combination a compressor, a condenser, a heat exchanger, an expansion valve, and an evaporator interconnected conventionally in a series circuit, said expansion valve including an inlet and an outlet, a valve seat, an actuating diaphragm arranged with one of its sides subjected to refrigerant pressure on the downstream side of said valve seat tending to throttle the valve, a spring together with atmospheric pressure operative on the opposite side of said diaphragm and tending to open said valve, a restricting refrigerant passage between said valve seat and said outlet, and means including said restriction to effect a minimum pressure drop in the refrigerant passing therethrough to said evaporator, whereby the refrigerant pressure in said evaporator is varied in a range between 5 and 10 pounds per square inch in direct proportion to the amount of vapor refrigerant mixed with the liquid refrigerant flowing through said restricted passage resulting in a corresponding rise and fall of evaporator temperature in response to corresponding rise and fall in the temperature of air entering said evaporator.

2,691,277. ICE-MAKING APPARATUS AND METHOD. William S. Stair, York, Pa.



1. In ice-making apparatus, the combination of, a stationary structure including water supply and circulating means to circulate water through an arcuately extending freezing zone, a freezing cylinder presenting an outer vertical freezing surface positioned within said freezing zone, means mounting said cylinder for rotation about a vertical axis, a refrigeration system including a motor-compressor and condenser mounted to rotate with said cylinder and to cool said freezing surface, and ice-removing means positioned along the path of said freezing surface and adapted to remove ice therefrom.

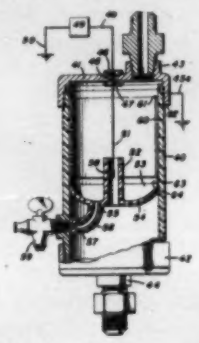
2,691,279. REPLACEABLE CHARGED CONDENSER AND TANK BY-PASS. Robert V. Anderson, Oklahoma City, Oklahoma.



2. A replaceable combination condenser and receiver comprising a condenser coil provided with cooling fins; a receiver tank connected with said coil at one end thereof; a valve at the opposite end of the coil; a compressor line coupled with said valve; an evaporator line coupled with said tank; a valve in said evaporator line; and a by-pass line interconnecting the valves and communicating with the evaporator line and the compressor line when said valves are moved to a position closing the coil and tank to maintain a refrigerant charge therein, said valves being movable to a position closing the by-pass line, and therefore, placing the coil and the tank into communication with the evaporator line and the compressor line.

2,691,280. REFRIGERATION SYSTEM AND DRYING MEANS THEREFOR. James A. Albert, Pittsburgh, Pa.

3. A refrigerating apparatus having as its component parts a compressor, a condenser, a refrigerant expansion device, an evaporator, and an electrical moisture precipitator in series in a closed cyclic path, and a refrigerant fluid in said apparatus,

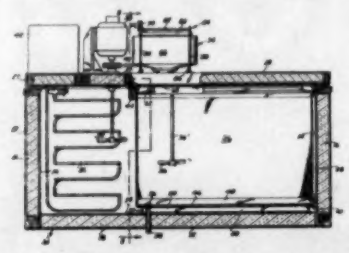


said precipitator having a valve means therein connecting the inner portion thereof to the atmosphere for removal of the collected moisture therefrom, said precipitator avoiding the requirement for any chemical moisture removing agent, whereby said refrigerating apparatus has therein a permanently installed dehydrator.

2,691,281. HEAT AND MATERIAL TRANSFER APPARATUS. Benjamin A. Phillips, Evansville, Ind., assignor to Servel, Inc., New York, N. Y.

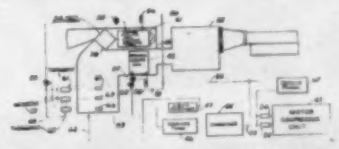
1. In an absorption refrigeration system utilizing a refrigerant, an absorbent and a pressure equalizing gas, an absorber arranged for gravity flow of absorption solution therethrough, said absorber having an inclined heat transfer wall only partially immersed in the absorption liquid with capillary grooves therein extending upwardly from the liquid level, each of said grooves having an ascending portion and a lower descending portion arranged to provide a siphon for the continuous flow of absorption liquid therealong above the liquid level, and a structure cooperating with the grooves to create a turbulence in gas flowing through the absorber and direct the gas into contact with the liquid in the grooves.

2,691,282. COOLING AND STORAGE APPARATUS FOR LIQUIDS. Howard J. Snelson, Seattle, Wash., assignor of one-eighth to Lyell Jennings and one-eighth to Joseph Pasero, both of Paris, Ill.



1. A liquid cooling and storing apparatus comprising a cooler tank, a storage tank received within said cooler tank to define therebetween a space for cooling liquid, a shallow pan received within the upper portion of said storage tank and having restricted means for flow of liquid therefrom to said storage tank, cover means overlying said storage tank, a receiving receptacle above and mounted on said cover means, conduit means interconnecting said receiving receptacle and said pan, valve means movable to cover the upper end of said conduit, float means disposed below said conduit, means interconnecting said float means and said valve means and operable to move said valve means toward open position when said float means moves downward, and additional means interconnecting said float means and said valve means and operable to move said valve means toward closed position when said float means rises.

2,691,488. SYSTEM OF DEHUMIDIFICATION. Madan L. Ghai, Delhi, India, assignor to Pullman-Standard Car Mfg. Co., Chicago, Ill., a corporation of Delaware. Application Oct. 4, 1951, Serial No. 249,747. 11 Claims. (Cl. 236—44.)



1. The method of controlling the humidity in the space inside an enclosure comprising the steps of passing fresh air through a heat exchanger, then passing said fresh air through a first cooling element, then passing said fresh air back through said heat exchanger, then mixing said fresh air with air from the space inside the enclosure, then passing the mixture through a second cooling element, rendering said first cooling element and said heat exchanger ineffective and said second cooling element effective under conditions of average humidity inside the enclosure, rendering said first cooling element and said heat exchanger effective and said second cooling element ineffective under conditions of high humidity inside the enclosure, and then passing said mixture into the enclosure.

Editor's Note: Patents described here have been selected from the "Official Gazette" of the United States Patent Office and offer only a brief summary of each invention. Printed copies of patents, reissued patents, and patent designs may be secured from the Patent Office; patents and reissues are 25¢ each, while designs are furnished at 10¢ each. Copies should be ordered by number and title and a mention of the fact if they are either Designs or Reissues.

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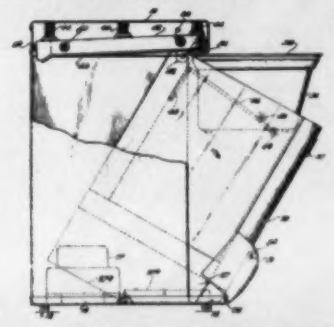
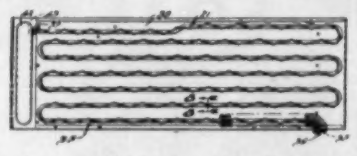
2,691,563. REFRIGERATOR. Charles G. Minor, deceased, late of Evanston, Ill., by Harry H. Gmeiner, executor, Detroit, Mich., assignor of one-half to Ruth F. McCaleb, executrix of Albert G. McCaleb, deceased, Evanston, Ill. Application April 16, 1949, Serial No. 87,906, now Patent No. 2,674,511, dated April 6, 1954, which is a division of application Serial No. 688,372, Aug. 3, 1946, now Patent No. 2,490,535, dated Dec. 6, 1949. Divided and this application May 20, 1953, Serial No. 356,212. 7 Claims. (Cl. 312—269.)



1. In a refrigerator, the combination of a housing, a food storage member open at the top, means mounting the storage member in the housing for swinging movement of the storage member between a first position in which it lies within the housing and a second position in which it projects from the housing, a cover member for the storage member movably mounted in the housing so as to cover the storage member in its first position and to be retained in the housing so as to permit the storage member to go uncovered to its second position, and a roller carried by one of said members and projecting therefrom for riding on the other of said members during movement of the storage member between its first and second positions and spacing the members from one another during such movement, said other member having a recess receiving said roller in the first position of the unit so as to permit the cover member to have sealing contact with the storage member in its first position.

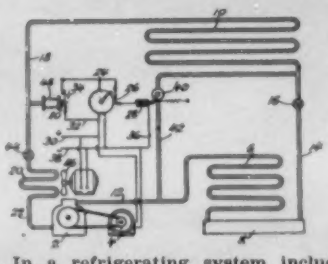
Week of October 19

2,691,813. METHOD OF CONSTRUCTING REFRIGERATION EVAPORATORS. Thomas H. Polad, Dowagiac, Mich., assignors to Rudy Mfg. Co., a corporation of Michigan. Application Aug. 15, 1950, Serial No. 179,469. 3 Claims. (Cl. 29—157.3.)



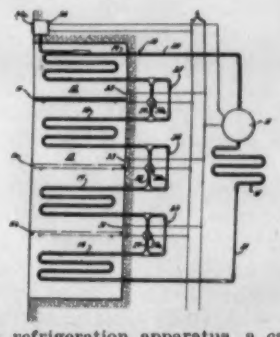
1. In a method of constructing a heat transfer device, the steps comprising: bending a length of tubing of circular cross section into a desired shape, flattening the wall of one side of said tubing to form the shaped tubing into a substantially D-shaped cross-section, placing a coil of a plurality of turns of brazing wire over one end of said tubing, securing one end of said coil relative to said end of said tubing and while said end of said coil is thus secured longitudinally sliding said coil along said shaped tubing to spread said turns helically around the length of said tubing, placing the brazing wire entwined tubing on a plate member, and heating said brazing wire beyond its melting point to braze the flat portion of said tube directly to said plate.

2,691,870. DEFROSTING MEANS FOR REFRIGERATING SYSTEMS. Victor W. Smith, Trenton, N. J., assignor to C. V. Hill & Co., Inc., Trenton, N. J., a corporation of New Jersey. Application Sept. 16, 1950, Serial No. 185,228. 6 Claims. (Cl. 62—3.)



2. In a refrigerating system including a compressor, a condenser and an evaporator, by-pass means for directing hot refrigerant gas from the compressor to the evaporator so as to by-pass the condenser and raise the temperature of the evaporator above freezing to defrost the evaporator, time controlled means connected to the by-pass means and operable at predetermined times to render said by-pass means active and inactive and thereby establish a defrosting cycle of predetermined duration, and other means controlling operation of said by-pass means to actuate the by-pass means and discontinue flow of hot refrigerant gas to the evaporator and renew flow of refrigerant from the condenser to the evaporator temporarily during the defrosting cycles in response to fluctuations in temperature of the evaporator.

2,691,872. PLURAL COMPARTMENT REFRIGERATION APPARATUS. Harold W. Schaefer, Philadelphia, Pa., assignor to Philco Corp., Philadelphia, Pa.



1. In refrigeration apparatus, a cabinet, a movable partition which may, selectively, be disposed at various locations within the cabinet to provide a pair of sub-compartments which may be adjusted as to volumetric ratio, evaporator portions arranged in heat exchange relation with the said pair of compartments, said portions being selectively operable at higher or lower refrigerating temperatures, and control means disposed to be actuated by said partition at its various locations and effective to cause operation of said evaporator portions at either the higher or the lower refrigerating temperature in accordance with the position of said partition with the cabinet disposition of the partition at any selected location within the cabinet actuating said control means in such manner that evaporator portions lying to one side of said partition are maintained at the higher refrigerating temperature and evaporator portions lying to the other side of said partition are maintained at the lower refrigerating temperature.

(To Be Continued)

LINES WANTED MAIL ORDER

We are a Refrigeration and Air Conditioning Supply House. We mail approximately 300,000 catalogues a year. Contact Mr. Wise about your products. 461 West 126th Street, New York 27, N. Y.

CLASSIFIED ADVERTISING

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ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other address by actual word count. Please send payment with order.

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SALESMAN WANTS position with a manufacturer of commercial refrigeration, air conditioners, domestic heating equipment or major electrical appliances. Twenty-eight years' experience as salesman, district and regional salesmanager in these lines. Not interested in a position for which this experience is not an essential qualification. Proven ability to establish and maintain sales of equipment designed for quality. Only four previous employers will indicate ability, stability and character. Will relocate or travel anywhere. Age 49. No outside interests and not interested in a side line or part time job on a commission basis. BOX A5151, Air Conditioning & Refrigeration News.

POSITIONS AVAILABLE

WANTED—MANUFACTURERS' representatives now contacting commercial refrigeration dealers in the following territories: Chicago, Atlanta, Detroit & Florida. Must be able to sell quality equipment: fast-growing line of special commercial refrigeration items of interest to established refrigeration dealers. Replies confidential. Write: Paul R. Stewart, C. SCHMIDT COMPANY, 1712 John Street, Cincinnati 14, Ohio.

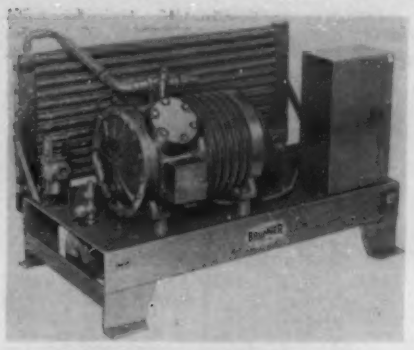
EXECUTIVE ENGINEER—to head Compressor Division of nationally known Midwest manufacturing firm. Unusual organizational opportunity. Experience in hermetic sealed compressor design required. Send resume of education and experience. BOX A5149, Air Conditioning & Refrigeration News.

EQUIPMENT FOR SALE

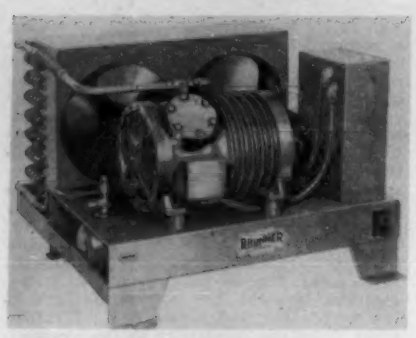
ATTENTION SERVICEMEN: Save 25 to 50% on your refrigeration parts. Send for our catalog of values today. Here is only one of our money saving offers. 1⅛" O.D. copper connections x 14¾" overall vibration eliminators, $4.65 each. Lot of 10, $4.00 each. WALTER W. STARR REFRIGERATION SUPPLIES, 2833 Lincoln Avenue, Chicago 13, Illinois.

BUSINESS OPPORTUNITIES

ESTABLISHED 20 years. Commercial refrigeration and air conditioning sales-service business and building for sale in prosperous midwest city of over 70,000. Good reputation, modern well-equipped shop. Ideal partnership set-up. Price under $50,000 including large building with large apartment. Terms. Inquire BOX A5144, Air Conditioning & Refrigeration News.



Brunner 3-hp. water-cooled unit.



2-hp. air-cooled unit.

New Brunner Series--

(Concluded from Page 1, Col. 4)

Air-water cooled combination models are available in ½ hp. through 3 hp., and capillary tube models in ¼ hp. through 1 hp. The truck refrigeration condensing unit series goes from ½ hp. through 3 hp.

Many new features are included in the new series and all units are powered by high-torque motor compressors.

Brunner-Metic models are available in a wide variety of voltages 115-208-230 single phase, 208-220 three phase.

RACCA, ARI Heads Confer on Problems

PHILADELPHIA — Officers and directors of the Refrigeration & Air Conditioning Contractors Association met here informally last week with Geo. S. Jones, Jr., managing director of the Air-Conditioning & Refrigeration Institute, to discuss mutual problems and possible solutions.

Canadian RSES To Meet In Montreal Feb. 7-8

MONTREAL, Que., Can. — The Refrigeration Service Engineers Society (Canada) will hold its 16th annual convention at the Mount Royal hotel here Feb. 7-8. The program will include educational sessions and a banquet and dance under the auspices of the Mount Royal Chapter.

A Case of Identity

LOS ANGELES—Amana Freezer Distributors here has changed its firm name to Powell Bros., the company announced recently.

No change in organization or ownership has been made and Powell Bros. will continue to distribute the Amana line in seven southern California counties. Owners of the firm are Jack T., William A., and Frank P. Powell.

"Trouble-free performance . . . makes satisfied customers for me," says Ernest W. Farr, Bell Refrig. Corp., Cleveland.

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- PACKAGED HEAT PUMPS, RESIDENTIAL & COMMERCIAL

All-Industry--

(Concluded from Page 1, Col. 4)

tor, 9th Exposition of the Air-Conditioning and Refrigeration Industry, 1346 Connecticut Ave., N. W., Washington 6, D. C.

List of exhibitors to date is as follows:

Company	Booth
A-P Controls Corp.	732-3
Acme Industries, Inc.	423-4
Addison Products Co.	406
Airtemp Div., Chrysler Corp.	415-6-7
Airserco Mfg. Co., Inc.	634
Alco Valve Co.	327-8
American Coils Co.	602-3-4-5-6
Aminco Refrigeration Products Co.	641
Ansul Chemical Co.	422
Bailey & Perkins Co.	114
Bailey Case & Cooler Co.	522-414
Baltimore Aircoil Co., Inc.	242-108
Bell & Gossett Co.	520-1
Betz Corp.	218-½7
The Brewer-Titchener Corp.	535
Brunner Mfg. Co.	426-7-8
Bryant Heater Div., Affiliated Gas Equipment, Inc.	404
Bundy Tubing Co.	308
Bush Mfg. Co.-Heat-X, Inc.	323-4-5-6
Carrier Corp.	302-3
Chase Brass & Copper Co.	725
Chemical Solvent Co.	502
Coleman Co.	613-4
Copeland Refrigeration Corp.	141-2-3
Cordley & Hayes	734
Cory Corp.	503
Curtis Refrigerating Machine Div. of Curtis Mfg. Co.	421-314
Cutler-Hammer, Inc.	518
The Dayton Rubber Co.	510
Detroit Controls Corp.	301-434
Dole Refrigerating Co.	322
E. I. du Pont de Nemours & Co., Inc.	515-½6
Davison Chemical Co., Div. of W. R. Grace & Co.	432
Dean Products, Inc.	410
Eston Chemicals Div., American Potash & Chemical Corp.	331
Fedders-Quigan Corp.	409
Frick Co.	726
Frigidaire Div., General Motors Corp.	655
Friedrich Refrigerators, Inc.	745
General Chemical Div., Allied Chemical & Dye Corp.	401
General Controls Co.	414
General Electric Co. (Schenectady)	247-8-9
General Electric Co. (Bloomfield)	316
Gibson Refrigerator Co.	628
Halstead & Mitchell	505
Henry Valve Co.	608-9
Hussmann Refrigeration, Inc.	620
Imperial Brass Mfg. Co.	630-1-2
Jackes-Evans Mfg. Co.	109
Jarrow Products, Inc.	626
Jordon Refrigerator Co.	429
Kelvinator Div., American Motors Corp.	411-2
Kenmore Machine Products, Inc.	309
Kennard Corp.	523
Kerotest Mfg. Co.	413
Kirsch Co.	243
Kramer Trenton Co.	701-2-3
Larkin Coils, Inc.	407-8
Lehigh Mfg. Co.	635-6-7-8
Lewin-Mathes Co.	601
Lipman Div., Yates-American Machine Co.	650
Lonergan Mfg. Co.	653-4
The Marley Co.	701
Mario Coil Co.	430-1
Jas. P. Marsh Corp.	737-8
McCord Corp.	640
The McIntire Co.	112
McQuay, Inc.	306-7
Minneapolis-Honeywell Regulator Co.	305
Mitchell Mfg. Co.	621-2
Mueller Brass Co.	405
The Pacific Lumber Co.	649
Paragon Electric Co.	651-2
Penn Brass & Copper Co.	315
Penn Controls, Inc.	506
Ranco Inc.	334
Redmond Co., Inc.	731
Refrigeration Engineering, Inc.	201
Remco, Inc.	648
Reynolds Metals Co.	402-3
Servel, Inc.	642-3-4-5-6
Sporlan Valve Co.	332-3
Standard Refrigeration Co.	534
Sub-Zero Freezer Co., Inc.	647
Sun Oil Co.	234
Superior Foundry, Inc.	607
Superior Valve & Fittings Co.	504
Tecumseh Products Co.	528-9-30
Temprite Products Corp.	319
Tenney Engineering, Inc.	336
The Texas Co.	101
Torrington Mfg. Co.	525
Tranter Mfg., Inc., Kold-Hold Div.	418-419
Tyler Refrigeration Corp.	425-310
Typhoon Air Conditioning Co., Inc.	501
Unilectric, Inc.	629
Union Asbestos & Rubber Co.	146-7-8
United Refrigerator Co.	615-6-7-8
United States Air Conditioning Corp.	531
United Wire & Supply Corp.	633
Viking Copper Tube Co.	304
Virginia Smelting Co.	519
Henry Vogt Machine Co.	113
Wabash Corp.	639
Wagner Electric Corp.	237
Westinghouse Electric Corp., Pittsburgh	311-2
Westinghouse Electric Corp., Mansfield, Ohio	313-20
White-Rodgers Electric Co.	513-514
Wolverine Tube, Div. of Calumet & Hecla, Inc.	526
Worthington Corp.	517-(½)516
York Corp.	511-2

Manitowoc Line for '55--

(Concluded from Page 1, Col. 5)

top, freezer-on-bottom combination remain the same at 10 and 11½ cu. ft., additional storage space has been added in the refrigerator with an exclusive new inner door, according to Manitowoc.

"This completely enclosed space is divided into five convenient compartments, each with frosted sliding panels, plus a top rack for small jars," it was explained.

"The distinctive inner door is perfect for keeping often-used foods within easy reach and for organizing small jars and leftovers. The temperature-controlled 'Butter-Caddy' and cheese-keeper space is included in the new-style door."

Another feature in the 2-Zone is "Feather-Glide" sliding shelves, new in this year's model. "Easy-to-clean plate glass shelves are edged with satin-finish stainless steel adding an even richer appearance inside the unit," the company said.

The 10-cu. ft refrigerator section will hold all the fresh food needed for a week by the average family, Manitowoc claims. It has extra tall bottle space, a large crisper drawer, and five different height shelves.

The 11½-cu. ft. freezer, below, has space for 400 lbs. of food, plus five fast-freeze ice cube trays.

Manitowoc engineers make use of a constant circulation fan in the 2-Zone reffrigerator section to force high humidity, it was pointed out. This is said to keep foods moist and fresh without wrapping.

"Freezer and refrigerator are governed by separate thermostats so that freezer temperatures can go down as low as 52° below freezing without affecting temperature inside the refrigerator," Manitowoc said.

Regarding the Decorator 2-Zone with antinque copper doors, the company explained that the copper, which is electro-plated on the steel outer shell, has a satiny hand-rubbed appearance with darker highlights. It will not tarnish or show fingerprints, according to the manufacturer.

Manitowoc's freezer line consists of three upright models—14, 18.5, and 22-cu. ft. capacities. All require the same 2½ by 3 ft. of floor space.

"They feature Cold-Hold inner doors on each compartment, designed to add a kitchen cabinet efficiency to the interior appearance of the unit," the company said. Actually, a homemaker can keep a current record of freezer contents right on the door.

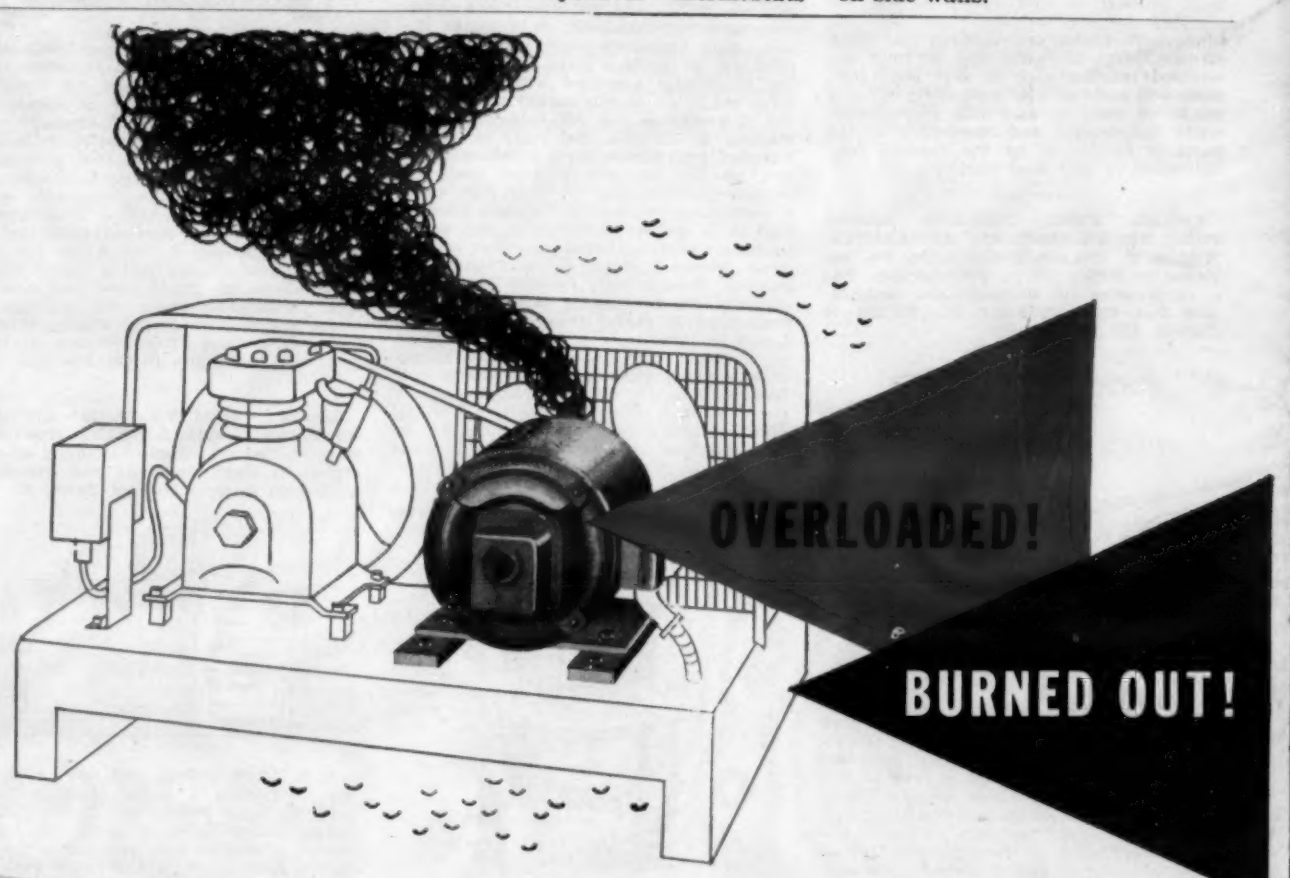
"These specially designed Cold-Hold inner doors snap back for easy access to the roomy compartments, stay tightly closed.

"Manitowoc freezers now have individual eye-level thermostats for easy adjustment of the freezing temperature. The homemaker has direct fingertip control over temperature range from 0° F. constant storage temperature to 52° below freezing."

Manitowoc 2-zone combination.

"Arctic-Blanket Cold-Wall" construction, with coils on all five freezer walls, is used in all Manitowoc freezers. Manitowoc engineers estimate this construction provides about 50% more refrigerated surface than ordinary cold-shelf design, and maintains even cold storage temperature throughout the unit.

Also, the company claims, there's no frost build-up on shelves to reduce food storage space. In addition, it said, defrosting is necessary "only half as often, and is easy because frost forms only on side walls."



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- prolonged operation at excessive suction pressure
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